MARCH 1961

National SAFETY NEWS

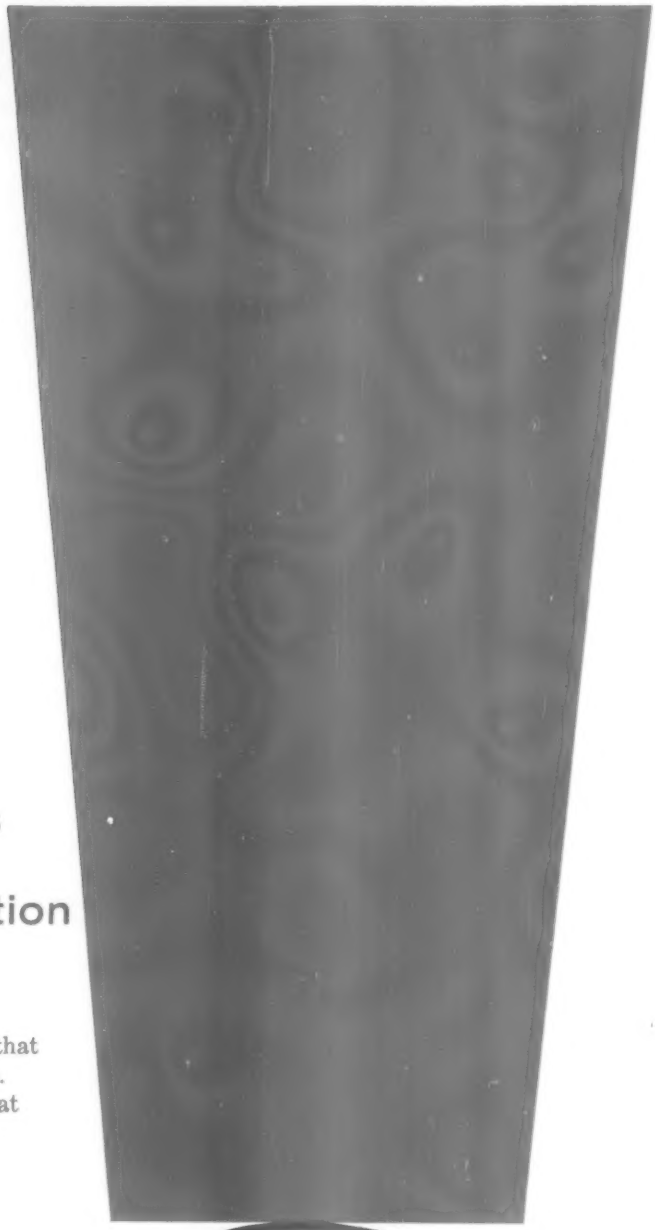
25th

Annual Safety Equipment Issue

1961



SECTION	DATA
1	PLANT DESIGN AND CONSTRUCTION
2	HOUSEKEEPING AND MAINTENANCE
3	INDUSTRIAL HEALTH ENGINEERING
4	NOISE CONTROL
5	PERSONAL PROTECTION PART 1
6	PERSONAL PROTECTION PART 2
7	MATERIALS HANDLING
8	MACHINE OPERATION AND GUARDING
9	PLANT PROTECTION
10	NUCLEAR RADIATION
11	MEDICAL AND HEALTH SERVICE
12	SAFETY PROMOTION AND TRAINING
13	PRODUCT AND SOURCE DIRECTORY



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25th Annual Safety Equipment Issue

NATIONAL SAFETY COUNCIL

Chartered by the Congress of the United States

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THE COVER

WELDER is protected from heat of steel by reflective-insulating clothing and by asbestos blankets covering the heated steel. He uses an inert-gas-shielded method.

37,800 copies of this issue were printed.

SAFETY NEWS

A NATIONAL SAFETY COUNCIL PUBLICATION

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EDITORIAL

New Market for Safety Equipment?

THERE was a time when protective clothing was like mosquito repellent. It was unpleasant and unattractive to wear, but it was used because it gave protection against a more painful bite!

But things have changed. Today's personal protection is as smart as the other apparel of our jet-propelled age. Hard hats, safety shoes, and other protective devices are comfortable to wear and attractive to the eye. In fact, today's protective apparel has a certain mark of distinction. It sets off its wearer as the he-man of industry – and does it more effectively than the tattoo on the back of the hand in the cigarette ads.

In short, we can congratulate ourselves on the present status of safety equipment – modern design has resulted in wide acceptance by the American worker. Of course, there are still converts to be made both among management and employees. There are still those thousands of industrial operations where safety is a stepchild and protective equipment is looked upon as a frill. But the great strides have been taken – protective equipment is a must in America's top industrial concerns.

In looking for new worlds for safety to conquer, it might be well to look beyond the plant gate. Remembering that it was mechanization that brought safety and protective equipment to the industrial scene and that mechanization was a major factor in bringing safety to agriculture, this may be the time to take a long look at the increasing mechanization of the American home.

In millions of basement workshops throughout the land you can hear the buzz of power tools while outside some 20,000,000 power-driven lawn mowers are mulching suburban lawns. This mechanization has brought with it the usual penalty in accidental injury and death.

Will this trend in mechanization bring with it a rising interest in safety? Already there are indications that this is happening. Many of the nation's leading business organizations have taken positive steps to build a safety consciousness in the worker that he will carry off the job to his home and family. And in recent months many cases have come to the attention of the National Safety Council where workers have brought their safety habits home. Eye injuries have been averted in home workshops, thanks to goggles and face shields. Toes have been saved from mower blades, thanks to safety shoes.

It is possible that the same safety dress that has become so fashionable in industry will become the "right" thing to wear when working about the mechanized home?

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THE SAFETY VALVE



Nothing human is alien to me
—TERENCE

CENTURY PLANT

EACH YEAR *Factory* magazine picks up a number of outstanding manufacturing plants as the best of the year and publishes elaborate picture stories about them. Invitations to enter the contest are sent to prominent concerns. One of them, an eastern manufacturing company, sent this kidding reply:

"Thank you for your invitation to enter our plant in *Factory's* 'Best Plants of 1961' competition. We would be reluctant to do so, even if you enlarged the scope of the contest to include antiques. Our 'new plant' started to operate about 1860– not 1960. So it's just a small matter of a hundred years.

"And believe me, if you ever saw the plant, you wouldn't think about entering it in *any* competition."

TOOLS OF ALL TRADES

THE WHEEL has been called the most important invention of all time. Mechanically, that is probably correct. "A wheel in the middle of a wheel," to quote Ezekiel, describes many of our mechanical contraptions. In fact you could say that about the whole industrial setup – organization as well as machinery.

And with a little imagination the prophet's words can be applied to traffic and aviation:

". . . And when the living creatures were lifted up from the earth, the wheels went with them.

". . . For the spirit of the living creatures was in the wheels."

Apparently it still is – more than ever.

But there is one invention even more dynamic than the wheel; it's a set of 26 characters that form our alphabet. Where would we be today if our communications during the past 3,000 years had been limited to the spoken word and a system of hieroglyphics that only a few people could understand?

Radio and TV have become important media, but for lasting influence there is no substitute for the written word and the printed page.

In the alphabet both safety men and writers have a kit of indispensable tools. Its characters can be put together in an unlimited number of combinations. In the right sequence they can convey valuable information and make telling appeals to emotion and reason.

Arabic numerals have been another contribution to progress. Without them, the whole science of mathematics and the technology based on it would have been impossible.

And just imagine keeping accident statistics and recording frequency and severity rates in the clumsy Roman numerals used on monuments!

WHAT PRICE PERFECTION?

PERFECTIONISTS have their place. They're not comfortable people to work with but they do keep the rest of us on our toes. However, the perfect man, if you could find one, might be too inflexible for most jobs. And, when you balance output with quality, his over-all performance might not be satisfactory.

Many a man undoubtedly loses out in his climb up the ladder because of a mania for perfection. Often, he puts off action waiting for the perfect solution. It may not materialize, or if it does, the time for action is past.

In accident prevention, the militant man who demands 100 per cent protection or nothing, immediately may get the latter. He may also build up sales resistance in management, which may work against even practical measures in the future.

In getting out a publication, we're up against the same conditions. If you were to split hairs fine enough, you could find some reason for throwing out almost every bit of copy in an issue. Only an egotist could be completely satisfied with what he has written or the magazine he has put together.

But, as Samuel Johnson said, "Nothing will ever be attempted if all possible objections must first be overcome."

The line between sloppy work and unrealistic standards is seldom clearly defined. The person who knows where the law of diminishing returns starts to work is the one who gets things done.

WAR and revolution never produce what is wanted, but only some mixture of the old evils with new ones. What is wanted is a peaceful and rational solution of problems and situations—but that requires great statesmanship and great popular sense and virtue.—*William Graham Sumner,* "War," (1903).

WE ALL need editing.—*William Feather.*

And that applies to speech and conduct as well as writing.

Carman Fisk

Mar. 5-7, Atlanta, Ga.

Southern Safety Conference & Exposition (Atlanta Biltmore Hotel). W. L. Groth, executive director, PO Box 8927, Richmond 25, Va.

Mar. 14-15, Fort Wayne, Ind.

1961 Northeastern Indiana Safety Conference and Exhibit. Ivan A. Martin, manager, Fort Wayne Safety Council, Chamber of Commerce Building, Fort Wayne.

Mar. 14, 21, 28, Baltimore, Md.

Fifth Occupational Safety Seminar. Sponsored by the Baltimore Safety Council, Safety Engineering Club of Baltimore, and Department of Labor and Industry, State of Maryland. Earl W. Smith, managing director, Baltimore Safety Council, 1511 Guilford Ave., Baltimore.

March 27, Toronto, Ont., Canada.

Annual Meeting, Construction Safety Associations of Ontario (Royal York Hotel). James N. Shephard, manager, 90 Harbour St., Toronto 1.

Mar. 28-30, Los Angeles.

Eighth Annual Western Safety Congress and Exhibits (Ambassador Hotel). Joseph M. Kaplan, manager, Greater Los Angeles Chapter – NSC, 3388 W. Eighth St., Los Angeles 5.

April 3-4, Boston.

Fortieth Annual Massachusetts Safety Conference and Exhibit (Hotel Statler Hilton). Sponsored by Massachusetts Safety Council, Safety Council of Western Massachusetts, and Worcester County Safety Council. Bert Harmon, manager, Massachusetts Safety Council, 54 Devonshire St., Boston 2.

April 9-13, Detroit.

American Industrial Hygiene Conference (Sheraton-Cadillac Hotel). American Industrial Hygiene Assn., 14125 Prevost, Detroit 27.

April 10-11, Toronto, Ont., Canada.

Forty-fourth Annual Meeting and Safety Show (Royal York Hotel). R. G. D. Anderson, Industrial Accident Prevention Associations, 90 Harbour St., Toronto 1.

April 11-12, Oakland, Calif.

Ninth Annual Northern California Safety Congress and Exhibits (Hotel Claremont). Sponsored by the Eastbay Chapter of the National Safety Council. Clinton W. Dreyer, managing director, 1322 Webster St., Oakland 12.

April 11-13, Lansing, Mich.

Thirty-first Annual Michigan Safety Conference (Civic Auditorium). K. S. Hedges, executive secretary, c/o General Motors Corp., Detroit.

April 12-14, Gainesville, Fla.

Eighth Annual Conference on Accident Prevention Engineering (University of Florida). Donald B. Wilcox, conference coordinator, College of Engineering, Department of Industrial Engineering, University of Florida, Gainesville.



April 18-20, Houston, Tex.

Fifth Annual Industrial Mutual Aid and Disaster Control Seminar, sponsored by National Institute for Disaster Mobilization and Channel Industries Mutual Aid (Shamrock-Hilton Hotel). S. A. Anthony, National Institute for Disaster Mobilization, 475 5th Ave., New York,

April 25-27, Pittsburgh, Pa.

Western Pennsylvania Safety Engineers' Conference and Exhibit (Hilton Hotel). Harry Brainard, executive director, 305 1st Federal Bldg., Pittsburgh 19.

April 26-27, Indianapolis, Ind.

Central Indiana Safety Conference and Exhibit (Claypool Hotel). Jack E. Gunnell, Indianapolis Safety Council, 320 N. Meridian St.

May 1-3, Syracuse, N.Y.

Seventh Central New York Safety Conference and Exposition (Hotel Syracuse). Newell C. Townsend, manager, Greater Syracuse Safety Council, Syracuse Chamber of Commerce, 351 S. Warren St., Syracuse 2.

May 2-4, Carbondale, Ill.

Industrial Safety Conference, cosponsored by the St. Louis Chapter of the A.S.S.E. and Southern Illinois University. Dr. Ralph Gallington, chairman, Industrial Education Dept., Carbondale.

May 2-4, Columbus, Ohio

Thirty-first All-Ohio Safety Congress and Exhibit (Deshler-Hilton Hotel and Neil House). Arthur W. Moon, Congress manager, Div. of Safety and Hygiene, 400 S. Front St., Columbus 15.

May 4-5, Kansas City, Mo.

Central States Safety Congress (Municipal Auditorium). Phil Streit, National Safety Council, 425 N. Michigan, Chicago 11.

May 4-6, Norfolk, Va.

Twenty-seventh Annual Conference, Virginia Safety Association (Hotel Monticello). Hiram M. Smith Jr., Virginia Safety Association, 810 Mutual Bldg., Ninth and Main Sts., Richmond 19, Va.

May 8-10, Bethlehem, Pa.

Thirty-fourth Annual Eastern Pennsylvania Safety Conference (Hotel Bethlehem). Harold A. Seward, secretary-treasurer, Lehigh Valley Safety Council, 602 E. Third St., Bethlehem.

May 9-11, Niagara Falls, N.Y.

Twenty-first Western New York Safety Conference (Hotel Niagara). P. O. Box 315, Niagara Falls.

May 10-12, Durham, N.C.

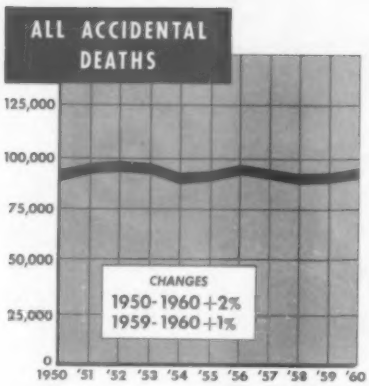
Thirty-first Annual North Carolina Statewide Industrial Safety Conference (Jack Tar Durham Hotel). H. S. Baucom, N. C. Industrial Commission, Raleigh, N.C.

May 18, Green Bay, Wis.

Thirty-third Fox River Valley and Lake Shore Regional Safety Conference, J. A. Long, Bay West Paper Co., Green Bay.

13,800 Work Deaths in 1960

— Same total as in '59, but rate decreases in manufacturing, agriculture, contract construction



THERE WERE about 13,800 deaths from work accidents in 1960, the same total as in 1959. Increases were recorded in 3 of the 7 principal industrial groups; decreases in 3; and no change in 1.

For manufacturing, the death total was 1,700, or 200 less than in 1959.

In agriculture and contract construction, deaths decreased 100 each to 3,300 and 2,400 respectively.

In transportation and public utilities combined and in mining, quarrying, oil and gas wells, deaths increased 100 each to 1,600 and 800 respectively.

Service (including finance and government) deaths went up 200 to 2,800; while trade remained unchanged at 1,200.

Disabling injuries totaled about 1,950,000 – the same as in 1959. Permanent impairment cases numbered about 85,000.

Employment in all industries during 1960 was about 2 per cent more than in 1959; manufacturing employment went up almost 2 per cent.

Accident rates cannot be computed at this time on a national scale. Preliminary information indicates that the all-industry frequency rate probably was lower than in 1959. Nonfatal injuries, as noted above, were the same as in 1959. Employment was up 2 per cent, and average hours worked per week decreased only 1 per cent, resulting in more exposure than in 1959.

Accident costs. Wage loss, medical expense, and the overhead costs of insurance for work accidents in '60 amounted to $2,100,000,000.

So-called "indirect" costs are estimated at $2,100,000,000. These include such items as time lost by workers other than the injured, time lost by workers whose injuries were not serious enough to be classified as temporary total disabilities, interference with production schedules, and property damage. Total costs were about $4,200,000,000.

Off-the-job-accidents. In addition to work accidents, off-the-job accidents to workers lowered the nation's productive capacity. The 1960 death toll from these accidents was approximately 29,800, and disabling injuries about 2,350,000.

Accidents to workers on and off the job totaled 43,600 deaths and 4,300,000 disabling injuries. Time lost during the year from these accidents (including indirect losses) amounted to about 280,000,000 man-days.

Fire loss. The 1960 total of property destroyed by fire reached $1,108,000,000, according to National Board of Fire Underwriters. This was 6 per cent more than the comparable 1959 total. In 1959, half of the loss from building, fires was in industrial and business establishments.

Industrial Commission records. Deaths reported to the Industrial Commissions in 31 states during 1960 totaled 7,570 or 1 per cent more than in 1959. Decreases of 1 to 41 per cent were recorded in 13 states; increases of 1 to 62 per cent occurred in 18 states.

WORK DEATHS IN 31 STATES

	1960	1959	% Change
Totals for 31 states	7,570	7,531	+ 1
Alabama (11 mos.)	102	96	+ 6
Arizona	100	86	+16
California	850	903	− 6
Colorado	119	104	+14
Connecticut (11 mos.)	83	71	+17
Florida	265	225	+18
Georgia	203	217	− 6
Idaho	65	41	+59
Illinois (10 mos.)	209	206	+ 1
Kentucky	102	63	+62
Maine	31	41	−24
Maryland	125	123	+ 2
Massachusetts	632	579	+ 9
Michigan	237	233	+ 2
Mississippi	164	159	+ 3
Missouri	85	96	−11
Montana	62	59	+ 5
Nebraska	72	83	−13
New Hampshire	13	22	−41
New Jersey	147	153	− 4
New York	1,440	1,522	− 5
North Carolina	119	144	−17
North Dakota	48	42	+14
Oregon	123	124	− 1
Pennsylvania	701	662	+ 6
South Carolina	103	84	+23
Texas	616	649	− 5
Virginia	221	224	− 1
Washington	211	220	− 4
West Virginia	196	189	+ 4
Wisconsin	126	111	+14

THE NATIONAL ACCIDENT FATALITY TOLL

	1960	1959	% Change
All Accidents	93,000	92,080	+1
Motor-Vehicle	38,200	37,910	+1
Public Non-Motor-Vehicle	16,500	16,500	0
Home	27,500	27,000	+2
Work	13,800	13,800	0

Note: Motor-vehicle totals include some deaths also included in work and home totals. This duplication amounted to about 3,000 in 1960 and 3,100 in 1959. The 1959 all-accident and motor-vehicle totals are official figures of the National Office of Vital Statistics; all others are National Safety Council estimates.

DIARY OF A SAFETY ENGINEER

Demon Rum sticks its head into the Project, and a quick survey convinces me to take the problem to a management meeting



ALCOHOL AND HIGH BRASS

Fiction by BILL ANDREWS

THREE REPORTS were on my desk Tuesday which contained related pieces of information. They suddenly lifted what had been a growing concern in my mind to the level of action-producing suspicion.

First: a report by Bert on a routine housekeeping inspection in one shop, which contained this paragraph, "I called the attention of the foreman to the tripping hazard, and his response was, 'Aw nuts, Junior, nobody's dumb enough to trip over that pile of timber. We'll use it Thursday, and then you can come back and give us a good report. Now go away and stop bothering me.' In my opinion, the foreman was high. At least there was a pretty strong whiskey smell on his breath, and his manner was very different from his normal one."

Second: a report from City Hospital on a case brought in from the Project Monday after a blow on the head received during a fall. The report said, "No concussion and only slight contusions. Patient's fall and subsequent incapacity are both, apparently, the result of intoxication."

Third: A memo from the head of the plant-protection force saying that he wanted to confer with me at once on the problem of an increase of driving under the influence of alcohol on our property.

I got on the phone and called four different personnel offices on the Project. Three of the four reported recent cases of disciplinary action involving alcohol. Our district office of the Highway Patrol said they had not seen a marked increase in driving under the influence, but they pointed out that they had conducted a vigorous enforcement campaign throughout December on this point and that this probably held the situation under control. The desk sergeant commented, "The word has gone around at the roadhouses that we are on the job, and often a guy who gets loaded will call a cab instead of driving home. Or else they'll assign one member of the party the job of staying sober."

Both the county sheriff and the local Methodist minister are convinced that drinking is definitely on the increase. They point out that the Project has brought in a lot of single men and men temporarily separated from their families, and also it has put a lot more money in the pockets of our local people. The minister felt that much could be done if only the sheriff and local police would do a stricter enforcement job, but the sheriff is inclined to throw up his hands in defeat.

I next went to see Bart Day, who is the most influential union leader concerned with plants on the project. Bart and I have had some arguments in the past – notably over discharges for violations of safety rules. But I have been able to convince him – in part, at least – that management's motive in such firings is the welfare of the employees. So, when I brought up the drinking problem, he was willing to listen, and not jump to the conclusion that I was out to build up a blacklist. "Sure, I know it's a problem," he said. "But the boys work hard and lots of them haven't much sense, and they are bored and lonely in the towns around here. Where can they go but the bars? If we had some decent community centers and recreational facilities, it might help, but when I suggest it the bigwigs all scream about the cost.

Next I looked up Hank, who is the moving spirit within the Alcoholics Anonymous in our area.

with individuals – individuals who are far enough gone to have hit bottom and waked up to the fact that they are alcoholics, that they can't lick the problem themselves, and that they need help. Then, and only then, AA can offer them something.

"But let me give you a tip. I hear you've got problem drinkers up in some of the front offices, and among the supervision, as well as down on the shop floor."

In a glum and unhopeful mood, I dropped into the office of the new medical director of the Project, Doctor John Hoier.

"Your trouble," he said, "is that you want to redeem individuals en masse. You are acting as if you could go through a force of 38,000 people and make them all safe by some kind of educational antisepsis. You aren't dealing with a problem of individual treatment, but of epidemiology. It is not an occasional drunk that worries you, but a trend, a movement involving large numbers of people. So go where you can act upon groups, not just individuals."

"What do you think I've been doing?" I shouted. "I've seen the sheriff and the union leadership and the parsons and AA."

"Maybe you can get some good out of the union," Doc said, "but the rest of the people are useful mainly to clean up the mess after individual catastrophes have occurred. No, you want to go to the center. Go talk to the high brass."

I recoiled from that. "And just what pearl of wisdom am I supposed to unload upon the big shots, even if I can get their ear."

"You can get their ear," Doc said emphatically. "I'm supposed to put on a program for the Executive's Round Table next week, and I suspect they'd stay away in droves if I announced my own favorite subject – the psychosomatic aspects of industrial allergies. No, that won't get out a crowd. But if I bill a talk on alcohol and accidents on this project, they'll turn out. Then maybe I can steal a few minutes at the end of the meeting to tell 'em about allergies."

"Why do you think they'll come to hear about alcoholism?"

"Because," Hoier said firmly, "every businessman over 40 has faced problems among his help in this area and found them tough. Also, thanks to various factors, alcoholic problems have been well publicized, even glamorized. They'll come."

"Okay," I replied, "so they'll come. But what do I tell them?"

"Tell them what's true."

I growled, "And what good will that do them? I haven't any pat answers to help them solve the problem."

Hoier grunted, "You mean you aren't a miracle worker. You mean you are annoyed because you can't offer a solution that has stumped the best brains ever since man found that grapes and grain fermented and formed drinkable ethyl alcohol."

I was getting annoyed at this. "No, I don't have to be a miracle worker. But why call people together to tell them you can't help them."

"Look," the doctor said, "I do that all the time – so does every doctor. So do you. I tell people to eat right and sleep plenty, to relax and not worry. I know they'll stuff themselves and have insomnia, develop tensions and fret and stew over things. You tell them to wear goggles and lift with their legs and practice good housekeeping. You know that some will fail to do these things. But is that a reason for not saying them?"

"That's different," I replied. "Some do listen, and behavior is changed in those who do. But this alcohol business, I can't see much of anything useful to say."

Hoier said, "You've got a lot of useful things to say. Let me enumerate:

"First, you can call their attention to the whole problem. Maybe this will help only in a few cases. But here and there among the executives is a man facing problems in his own life. You may stir him to face them honestly. Here and there will be an executive who has responsible subordinates heading toward alcoholism. You may stir one or two such executives to move in search of help for these subordinates.

"Second, you can speak for enforcement of work rules. I know you value engineering and education above enforcement – but there are *three* 'E's, not just two. Suppose two or three of the executives in the group go back and tell their superintendents to crack down on men showing up for work with a load under the belt. I say that's an end worth accomplishing.

"Third, you can encourage referrals to AA. Oh, I know what you're thinking. AA can only deal with individuals, and generally only with far-gone ones. But all broad problems are made up of individual cases, and these are worth working to save.

"Fourth, you can help me and the other doctors and the personnel men who try to help and counsel troubled employees by alerting management to the depth of the conditions underlying the drinking problem. Next time the high brass finds we are doing this kind of work, whether on a drinking problem or anything else disturbing a worker, the front office will be, because of your talk, a little more sympathetic to our efforts, a little less inclined to dismiss us as visionaries."

I opened my mouth to rebut the doctor's case, then shut it again. I'm skeptical – yet maybe he's right. Certainly I ought to be able to present an interesting talk, and Hoier is right that it would, if properly publicized in advance, get a good attendance. And if I could get a good audience of high officials, there are some side-licks on behalf of other safety procedures that could be slid in.

I think it's worth trying.

The Best Incentive

The best incentive to a good safety program is interest and action in safety by management—not cash or merchandise awards. The give-away approach to safety can have no real lasting effect in creating a safe work force. It emphasizes the record, not the fundamentals of an effective safety program.

Safety should be treated as a regular part of the job—something the workers are proud of. I believe in advertising the positive aspects of a safety program but the best incentive is a well-organized program carried on continuously as part of good operating procedure and administered by safety-minded supervisors.—*Robert M. Gilmore, general safety supervisor, Rayonier, Inc. (Wood Products)*

IDEAS THAT WORKED

Devices and Ideas to Help Your Safety Program

By **ARTHUR S. KELLY,** Industrial Department, NSC

Banners Unfold Meaning of Safety



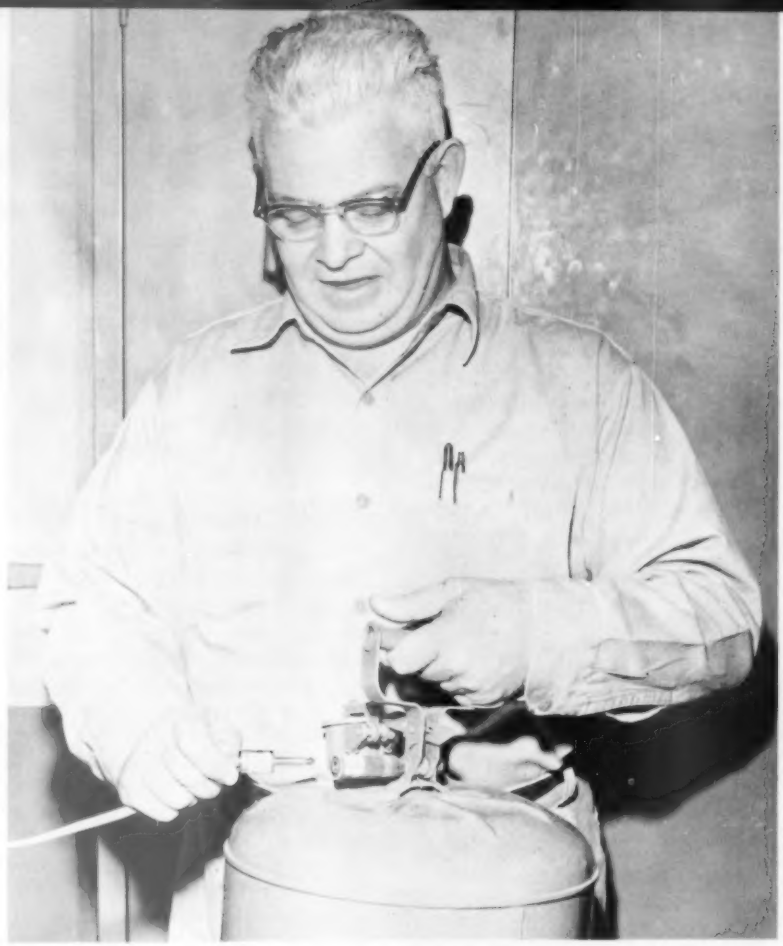
SAFETY unfolded into a more meaningful word at a dinner-business meeting of company supervisors and executives with stewards representing the three unions at Plant No. 54 of Continental Can Company of Canada, Limited.

Participants in the session first saw the word SAFETY spelled out in individual letters across the front of the room. For the program six men spoke about accident prevention. As each began to talk, he unfurled one of the letters in SAFETY, exposing an important subject related to plant preventive effort.

Discussion of these topics – sincerity, alertness, family, effort, training, and "you" – produced effective impact for the firm's safety campaigns.

N. C. Tompkins, personnel supervisor for the firm at New Toronto, Ont., submitted this Idea.





Clamp Down on Explosions

A TYPICAL telephone plug jack with one end secured to the can and the other end to the sturdy braided ground wire provides a quick, simple, static clamp that can be secured to any container.

The mechanical joints of the plug have been soldered to insure electrical continuity. This device can be used anywhere solvents are dispensed.

Clyde Morrison, developer of the clamp, demonstrates it here. A. James Fiske, safety engineer, Monsanto Chemical Company, Plastics Division, Springfield, Mass., submitted this Idea.

FEBRUARY WINNER

February prize winner was "Close But Not Forgotten." Whenever a worker has injury severe enough to require doctor's care but not considered disabling injury, he receives warning card and button. Yellow flag and words, "Knowing's Not Enough" are on button. Idea submitted by Edward C. Christensen of Marathon, a Division of American Can Company, Menasha, Wis.



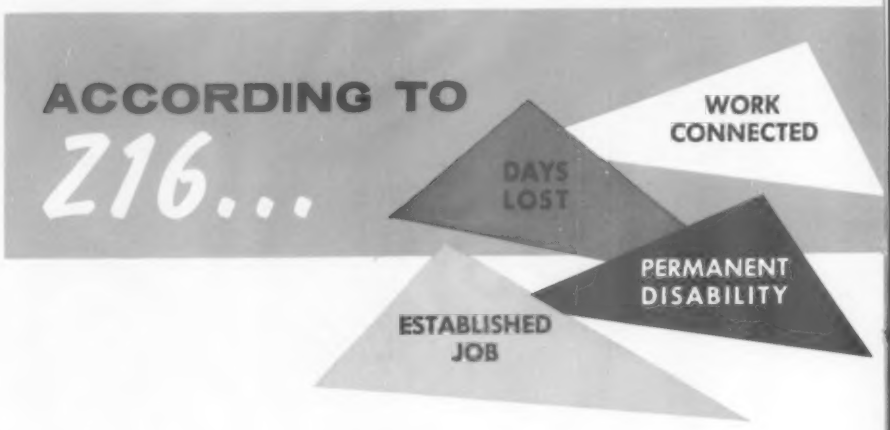
Hamstring Hazards With Hanger



HANGERS fabricated from a flat bar with the ends bent up provide a simple, beam-clamp type support for welder's cable, burner's hose and similar equipment. The result: Tripping-free passageways, decks, and other aisle areas.

The head end of a bolt is flattened, hardened, and welded to the center to the flat bar. The bolt is screwed into a "C" clamp made of a heavy flat bar that has been drilled, tapped, and bent to shape.

Employees of Bethlehem Steel Company's San Pedro Yard, Calif., worked out this device.



Back Injuries—PART I

By H. GENE MILLER

Manager, NSC Research and Statistics Dept., and member, Z16 Committee on Interpretations

THE MOST CONTROVERSIAL disability in injury reporting today is the back injury. Until the 1954 revision of the American Standard, most back ailments reported on the job were considered work injuries, regardless of the circumstances under which they occurred, or allegedly occurred.

If an employee claimed a back injury on the job, and the company could not disprove the claim, the standard procedure required that the injury be included in the company's injury record. Undoubtedly, many of these cases merely became symptomatic at work and the persons either thought the injuries arose out of work, or they claimed the injuries arose out of work to take advantage of medical and compensation benefits.

This series of articles is presented to prove better understanding of the standard injury reporting procedure, to accomplish more uniformity in the classification of injuries, and to permit the safety man to rule on more of his own cases. Wording and intent of the Standard will detail those rulings by the Committee on Interpretations.

Wording of the Present American Standard. Because of the situations stated above, an attempt was made in the 1954 revision of the Standard to provide an objective plan to aid in separating the nonwork injuries to the back from the work injuries.

The wording of the present Standard on back injuries is:

"A back injury or strain shall be considered a work injury only if it meets both of the following conditions:

> (a) There is a clear record of an accident or an incident, such as slip, trip, fall, sudden effort, over-exertion, or blow on the back.
> (b) The physician authorized to treat the case is satisfied, after a complete review of the circumstances of the accident or incident, that the injury could have arisen out of said accident or incident.

A back condition which is revealed while an employee is performing his normal, regular duties, but which neither results from nor is caused by an accident or incident, shall not be considered a work injury."

Cases Referred to Committee on Interpretations. In the six years during which the specific section on back injuries (Section 5.2) has been included in the Standard, nearly 100 back cases have been referred to the Committee on Interpretations for review and decision. These cases have provided information which permitted setting down a more precise basis for interpreting the Standard, and when the Standard was reviewed in 1958, the following interpretation of Section 5.2 on back injuries was included in the appendix:

"The provisions of 5.2 do not modify or limit in any way the basic principle of the Standard that all injuries arising out of and in the course of employment are reportable.

"The purpose of 5.2 is to provide a logical and consistent procedure for determining (for record purposes) whether or not a back case that becomes apparent in the course of employment did in fact arise out of employment. Examples of certain events are cited which, if associated with the occurrence of back disability, shall be prima facie evidence that the injury arose out of employment, but final determination is based on the opinion of the doctor as to the possibility of a causal relationship between the event and the disability.

"It is the intent of 5.2 to exclude from the record any back injury or condition that did not arise out of employment even though it became symptomatic or apparent in the course of employment. This is con-

sistent with the basic definition of a work injury as contained in Section 1 of the standard.

Injuries During Normal Duties May Be Reportable. "On the other hand, it is not the intent of 5.2 to exclude from the record any back injury that did in fact arise out of employment, merely because it became symptomatic or apparent in the performance of normal, regular duties. Reportable back injuries can and do occur in the performance of normal, regular duties. Specifically, the possibility of overexertion is not ruled out merely because the particular activity involved at the time of the onset of symptoms is one that the employee has repeatedly performed without injury.

Information to Assist in Determining Reportability. "To assist in determining the reportability of specific cases, the following questions may be employed:

(1) Was there an accident such as a slip, trip, fall, sudden effort, or blow on the back?

(2) Was there an incident that might have had a causal relationship to the occurrence of the symptoms, such as lifting, shoveling, bending, pushing, pulling, carrying, stooping, squatting, or twisting?

(3) Is it the opinion of the doctor authorized to treat the case that the accident or incident in (1) or (2) could have produced the current symptoms either as an aggravation of a previous back injury or as a new injury?

"The answers to the above questions should be interpreted as follows:

(a) If the answers to questions (1) and (3) are "yes," the case is reportable.

(b) If the answers to questions (2) and (3) are "yes," the case is reportable.

(c) If the answers to both (1) and (2) are "no," the case is not reportable.

(d) If the answer to question (3) is "no," the case is not reportable."

Because of the frequency with which back injuries occur, and because of the complexity of this type of disability and the difficulty of determining the relationship of the injury to the employee's work, it is impossible to cover this adequately in one article. The discussion on this type of disability will be continued in future articles, where separate parts of the standard will be interpreted in detail, including specific decisions of the Committee on Interpretations.

Getting By

ARE YOU GETTING BY? What are you getting by with?

Fool a sweet young thing into thinking you are 10 years younger than your driver's license says?

Put a penny in a fuse and don't burn the house down?

Buy a double-breasted suit and cover up the pot?

Roll through a stop sign without getting caught?

Switch to vodka martoonies for lunch and come back to work glassy-eyed, but breathless?

Ignore first aid without getting infected?

Take pep pills to cover up lack of rest?

Barrel through school zones without hitting kids?

Sell the spouse on sitting up with sick friends?

Shovel snow off the drive in 15 minutes flat and feel fine?

Eat all sorts of goodies and only gain a few pounds per year?

Have do-it-yourself heavenly profile kits to fool the boys?

Go blind without glasses because they don't look nice on you?

Let the kids eat extra pills and pump them out periodically?

Whistle at cute old gray-haired ladies, hoping they'll turn out to be cute little young platinum-haired chicks?

Swim after eating and generally don't sink?

Add coloring to the locks to enhance that distinguished look?

Take more pills than the directions allow and don't suffer?

How long do you expect to get by this way? When do you figure your number will come up?

The tenacity with which we glom onto our short lease on life depends to a great measure on what we try to get by with.

Some "get by" dodges are harmless. With others, you're trying to get by with murder. Your own, that is!

ROBERT D. GIDEL

Some New Aspects Of Chemical Safety

Howard H. Fawcett, consulting engineer, Research Laboratory General Electric Company, Schenectady, N. Y., will speak on "Some New Aspects of Chemical Safety" at the April 5 meeting of the Chicago section, American Industrial Hygiene Association. Contact Jerome Siedlecki, NSC staff specialist in industrial hygiene, at Council headquarters, 425 N. Michigan Ave., Chicago 11.

Campus Safety Data Donated to Penn State

A collection of safety reference material has been donated to the Pennsylvania State University library by Mrs. Lorin Elder, widow of a career safety man who died recently. Included in the gift were text books and other materials on safety education and accident prevention. Mr. Elder had been in charge of the University's safety division since 1936. The full-time campus safety program ws the first of its kind in the nation.

Modern Occupational Medicine. A. J. Fleming, M.Sc., M.D., F.A.C.P.; C. A. D'Alonzo, M.D., F.A.C.P., and J. A. Zapp, Ph.D. Second edition 1960. Lea and Febiger, Philadelphia, Pa. 587 pp. $12.

THE 35 CHAPTERS of the second edition of this book have been written by 22 employees of E. I. du Pont de Nemours and Co. The first edition was published in 1954.

The authors have reduced each subject to its essentials. The book is divided into eight sections. Section one gives a comprehensive treatment of the administrative functions of industrial medical services, the purpose and value of medical records, and the importance of medical history and physical examinations.

Section two on industrial preventive medicine discusses the toxicological methods of determining the toxicity hazard from a given chemical or process, and the function of an industrial hygiene laboratory in recognition, evaluation and control of potentially harmful chemical exposures. A chapter is devoted to protective clothing for the chemical industry. Methods are given for the determination of resistance of coated fabrics and sheet plastics to certain chemicals.

There is extensive discussion of the Chem-Proof Air Suit developed by DuPont. An immunization program is not outside the realm of industrial medicine and is properly discussed in this section.

Physical environment, work, stress, and occupational health, temperature, humidity, air motion, pressure, sound, and radiation are reviewed in section three.

Services allied to occupational medicine are discussed in section four. These include the medicolegal services, nursing, rehabilitation, safety, sanitation, water and atmospheric pollution, and sewage disposal. A good safety program must be a part of a successful occupational health plan.

The authors point out "human failure seems to be responsible for the majority of accidents and the basis for this failure is often a medical problem." There is a discussion of a different approach in safety education as a means of preventing accidents due to the human element.

The section on psychiatry comments on types of emotional and mental illness found in industry, and provides suggestions on how the industrial physician can help such employees. One chapter involves emotional factors in skin diseases.

Section six gives comprehensive comments on the subject of toxicology of chemicals used in manufacturing processes and insecticides. A chapter discusses industrial exposures to inorganic lead and occupational chest diseases are reviewed.

Problems of acute poisoning are discussed in section seven.

A brief introduction to the subject of biostatistics is given in section eight to assist the industrial physician using the statistical approach in the study of occupational disease.

This book should be particularly useful to industrial personnel planning an occupational health program, especially to those in the chemical industry.

J. T. SIEDLECKI

THE SAFETY LIBRARY



Reviews of books, pamphlets and periodical articles of interest to safety men

By **LOIS ZEARING,** Librarian, NSC

BOOKS AND PAMPHLETS

Chemicals

Flammability Limits of Methyl Ethyl Ketone and Methyl Isobutyl Ketone in Bromochloromethane-Air Mixtures. M. G. Zabetakis and others. 1960. 12pp. Publications Distribution Section, U.S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa. (Report of Investigations 5680) Free.

Iron and Steel Industry

Injury Experience and Employment Data for the Iron Blast-Furnace Slag Industry for 1958 and 1959. 1960. 20pp. U.S. Bureau of Mines, Washington 25, D.C. (Mineral Industry Surveys – Health and Safety Survey No. 488)

Mines

Controlling Mine Fires With High-Expansion Foam. John Nagy. 1960. 28pp. Publications Distribution Section, U.S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa. (Report of Investigations 5632) Free.

Design Criteria for Portable Seismographs. 1961. 6pp. Publications Distribution Section, U.S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa. (Report of Investigations 5708).

Injury Experience in Coal Mining, 1955-56. John C. Machisak and others. 1960. 116pp. Superintendent of Documents, Washington 25, D.C. (U.S. Bureau of Mines – Information Circular 7976) Price 60c.

Minimum Ignition-Energy Concept and Its Application to Safety Engineering. E. L. Litchfield. 1960. 10pp. Publications Distribution Section, U.S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa. (Report of Investigations 5671) Free.

Possibilities of Using Nuclear Energy for Gasifying Coal. U.S. Bureau of Mines. 1960. 11pp. Superintendent of Documents, Washington 25, D.C. (Information Circular 7965) Price 15c.

Reducing the Incendivity of Permissible Explosives by Sodium Chloride. N. E. Hanna and others. 1960. 19pp. Publications Distribution Section, U.S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa. (Report of Investigations 5683) Free.

Radiation

Protection Against Radiations From Sealed Gamma Sources. National Bureau of Standards. 1960. 70pp. Superintendent of Documents, Washington 25, D.C. (National Bureau of Standards Handbook 73) Price 30c.

Workman's Compensation

How to Control Alleged and Exaggerated Claims in Workman's Compensation. Joseph A. De Luca Jr. 1960. 22 pp. New Forum Pub. Co., Inc., P.O. Drawer 2724, Wilmington 5, Del.

MAGAZINE ARTICLES

Aeronautics

"Overrun Brake Designed for Jet Airliners." *Aviation Week*. January 9, 1961, pp. 77-78.

Air Conditioning and Ventilation

"Guide to Industrial Ventilation in the Chemical Industry." William V. Andresen. *Air Engineering*. January 1961, pp. 31-33.

"Practical Ways to Keep Crane Cabs Cool." F. W. Wendelburg. *Air Engineering*. January 1961, pp. 40-42.

Air Pollution

"Air Pollution: Conference Report." Third Air Pollution Research Seminar, New Orleans. March 22-24 1960. *Public Health Reports*. December 1960, pp. 1173-1189.

"Mobile Air Sampling Station Tracks Smog." *Air Engineering*. January 1961, pp. 34, 43.

Astronautics

"On Nuclear Power and Safety." Editorial. Clarke Newton. *Missiles and Rockets*. January 16, 1961, p. 50.

Chemicals

"Maximum Acceptable Concentrations: A Comparison in Russia and the United States." Hervey B. Elkins. *Archives of Environmental Health*. January 1961, pp. 51/45-55/49.

Chemical Industry

"Designing a High Pressure Laboratory." Melvin A. Rebenstorf. *Industrial and Engineering Chemistry*. January 1961, pp. 40A-42A.

Disaster Planning

"Bulldozers to the Rescue." *Journal of American Insurance*. January 1961, p. 22-24.

Economics

"Eyes Saved Are Dollars Saved, Too." *Factory*. January 1961, pp. 80-81.

Electrical Industry

"Polyphase Kwhr-Meter Test Hazard Eliminated." M. E. Culbertson and W. E. Dunfee. *Electrical World*. January 9, 1961, p. 40.

"Problems in Safety Grounding for Line Work." J. G. Cassan. *Electric Light and Power*. January 15, 1961, pp. 50-53, 75.

Health

"Forward Steps in Migrant Health." *Industrial Medicine and Surgery*. January 1961, pp. 23-24.

"Scope, Objectives, and Functions of Occupational Health Programs." *Journal of Occupational Medicine*. January 1961, pp. 34-36.

"Periodic Health Examinations: A Long-Term Study, 1949-1959." S. C. Franco and others. *Journal of Occupational Medicine*. January 1961, pp. 13-20.

Health Hazards

"Ceruminosis, a Factor in Audiometry." James Kawchak. *Journal of Occupational Medicine*. January 1961, pp. 21-24.

"Isopolyesters as Maintenance Coatings." R. W. Stephenson and L. B. Fosdick. *American Industrial Hygiene Association Journal*. December 1960, pp. 522-525.

"New Concepts of Industrial Dust Diseases." Seward E. Miller. *Industrial Medicine and Surgery*. January 1961, pp. 16-19.

"Some Effects of Epoxy Compounds on the Blood." J. K. Kodama and others. *Archives of Environmental Health*. January 1961, pp. 57/51-67/61.

"Studies on the Toxicity of Glycidaldehyde." C. H. Hine and others. *Archives of Environmental Health*. January 1961, pp. 29/23-36/30.

"Tetraethyl Lead Poisoning Incident With Eight Deaths." E. Elbridge Morrill, Jr. *American Industrial Hygiene Association Journal*. December 1960, pp. 515-517.

"The Toxicity of Titanium Tetrachloride." *Journal of Occupational Medicine*. James J. Lawson. January 1961, pp. 7-12.

Hospitals

"How the Pharmacist Can Promote Safe Drug Handling." R. David Anderson. *Hospitals*. January 16, 1961, pp. 63-64, 66-68.



"That's his clincher for safety shoes."

Mines

"New Mining Developments Serve Safety and Efficiency in Coal." *Coal Age. January* 1961, pp. 104-107. (Special report on the program highlights of the 74th meeting of the Coal Mining Institute of America.)

Noise

"A Criterion for Evaluation of Noise Exposures." Allen R. Jones and F. W. Church. *American Industrial Hygiene Association Journal*. December 1960, pp. 481-485.

Rehabilitation

"Modern Rehabilitation as Seen by an Industrial Physician." John Lauer. *Industrial Medicine and Surgery*. January 1961, pp. 11-13.

Sanitation and Maintenance

"Cautions and Warning Labels – Their Importance to Us." W. S. Jessop. *Modern Sanitation and Building Maintenance*. December 1960, pp. 15-17, 42.

Supervision

"How to Build Employee Morale." William E. Lissy. *Supervision*. January 1961, pp. 20-21.

Temperatures

"Effect of Geographical Origin on Performance in Heat." Constantin P. Yaglou. *Archives of Environmental Health*. January 1961, pp. 7/1-14/8.

ADDRESSES OF MAGAZINES MENTIONED

Air Engineering, 450 West Fort St., Detroit 26.

American Industrial Hygiene Association Journal, 1014 Broadway, Cincinnati 2, Ohio.

Archives of Environmental Health, 535 N. Dearborn St., Chicago 10.

Aviation Week, 330 W. 42nd St., N.Y. 36.

Coal Age, 330 W. 42nd St., N.Y. 36.

Electric Light and Power, 6 N. Michigan Ave., Chicago 2.

Electrical World, 330 W. 42nd St., New York 36.

Factory, 330 W. 42nd St., N.Y. 36.

Hospitals, Journal of the American Hospital Association, 840 N. Lake Shore Dr., Chicago 10.

Industrial and Engineering Chemistry, 1155 Sixteenth St., N.W., Washington 6, D. C.

Industrial Medicine and Surgery, P.O. Box 44-306, Miami 44, Fla.

Journal of American Insurance, 20 N. Wacker Dr., Chicago 6.

Journal of Occupational Medicine, 28 E. Jackson Blvd., Chicago 4.

Missiles and Rockets, 1001 Vermont Ave., Washington 5, D. C.

Modern Sanitation and Building Maintenance, Easton, Pa.

Public Health Reports, Washington 25, D. C.

Supervision, 404 N. Wesley Ave., Mount Morris, Ill.

Textile World, 330 W. 42nd St., N.Y. 36.

WIRE FROM WASHINGTON



By HARRY N. ROSENFIELD
Washington Counsel,
National Safety Council

Congress Awaits Safety Signals

CHANGEOVER of administrations has brought a watchful waiting period to see what proposals the new administration may make that affect safety.

Industrial Safety. An explosion at the National Reactor Testing Station in Idaho caused what AEC called "the first fatal accident in the history of the U.S. reactor operation." "Extremely high radiation levels" occurred in the reactor building, but "airborne radioactivity is being confined largely to the reactor building and the immediate vicinity."

The explosion resulted from "a nuclear excursion" or an atomic reaction which went out of control. As a result of this incident and as a precautionary measure, AEC requested all 47 operators of licensed reactors—as well as its own reactors—to provide current information regarding the performance of reactors and safety practices and controls.

AFL-CIO expressed "vital concern" over the accident because of "the whole field of safety in peaceful nuclear development." The AFL-CIO's Executive Council's legislative program called for "an effective and comprehensive federal program to control atomic radiation hazards."

AEC amended its regulations to require that all land-burial of low-level radioactive waste be on government-owned land, to assure adequate protection of the public health and safety throughout the period of any potential hazard. AEC also conducted an experiment to test containers used in sea disposal of radioactive waste.

Other regulation changes by AEC included amendments to clarify and simplify regulations for the protection of atomic industry employees and the general public against hazards arising from the possession or use of AEC-licensed radioactive materials.

In a proceeding to revoke an AEC license to a private shipyard for industrial radiography, the charges included alleged violations of license requirements to furnish employees with copies of the AEC's regulations on protection against radiation and failure to provide employees with copies of the licensee's own radiation handbook and safety manual.

The U. S. Bureau of Mines issued its first complete report on injuries for the iron blast-furnace slag industry. The combined fatal and nonfatal injury frequency rate per million man-hours of work time for 1959 was 11.95 for plant workers.

According to another Bureau of Mines report, the injury rate (combined fatal and nonfatal) for coal mines in the first 10 months of 1960 declined to 44.57 during the comparable period in the previous year—a reduction of .64 per cent.

The Interstate Commerce Commission created two Railway Safety and Service Boards, one with authority over installation of safety devices by carriers, the Accidents

THE MONTH IN WASHINGTON

- AEC amends regulations to require that all land-burial of low-level radioactive waste be on government-owned land, to assure adequate protection of the public health and safety throughout the period of potential hazard.
- ICC creates two railway safety and service boards: one with authority over installation of safety devices by carriers, the Accidents Reports Act, Safety Appliance Acts, and other designated programs; and the other board to deal with safe transportation of explosives and other dangerous articles.
- FAA issues uniform standards for identification marks on fixed-wing aircraft. FAA also solicits cooperation of aviation industry in investigation of metal propeller fatigue failures.
- Secretary of Commerce Luther H. Hodges opposed proposal to establish federal Department of Transportation recommended by former President Dwight Eisenhower and staff study of Senate Committee on Interstate and Foreign Commerce.

This report is an information service. Publication does not imply National Safety Council approval of or opposition to any legislation mentioned

Reports Act, Safety Appliance Acts, and other designated programs; and the other board to deal with the safe transportation of explosives and other dangerous items.

The chairman of the Railway Labor Executives' Association safety committee charged inadequate maintenance of equipment by some railroads is creating a hazard, and claimed the ICC has a "woefully inadequate safety inspection staff."

The President. President Eisenhower's last State of the Union Message was largely devoted to a review of "the record of these past eight years." So far as safety is concerned he made these comments:

1. "Determined efforts have improved workers' safety standards. Enforceable safety standards have been established for longshoremen and ship repair workers; Federal Safety Councils have been increased from 14 to over 100; safety awards have been initiated, and a national construction safety program has been developed."

2. "The new Federal Aviation Agency is fostering greater safety in air travel."

3. "The control of air and water pollution has been greatly strengthened."

4. "Americans now have greater protection . . . by new legislation which requires that food additives be proved safe for human consumption before use."

5. "A newly established Federal Radiation Council, along with the Department of Health, Education and Welfare, analyzes and coordinates information regarding radiological activities which affect the public health."

The outgoing President also submitted his last Budget and Economic Messages to the Congress. In these messages, President Eisenhower made legislative recommendations:

An increase of the gasoline tax by ½ cent per gallon, a raise in the aviation fuel tax by 2½ cents per gallon, and an imposition of a 4½ cent tax on aviation jet fuels;

Establishment of a Department of Transportation "to bring together at Cabinet level the presently fragmented federal functions regarding transportation activities";

Continuation, with modification, of authority for airport construction grants;

Strengthening authority for air



R. M. Weaver, supervisor of plant protection at TWA's overhaul base near Kansas, Mo., instructs two members of the fire-weather bureau-control tower team on maintenance of the truck's radio.

Triple-Threat Truck Aids Airport Safety

At a midwestern airport, there's a fire truck and crew that also operate as a weather bureau and a mobile control tower team for incoming and outgoing aircraft.

The truck has a weather vane, a wind speed indicator and a radio aerial that transmits ground weather conditions from the truck's fire crew to airliners. The contribution to safety is obvious.

Each of the base's 29 firemen is qualified to handle any of the three assignments at the airport, 16 miles northwest of downtown Kansas City, Mo. The base is operated chiefly for aircraft maintenance.

There's no permanent control tower available and the nearest whether station is at Kansas City's Municipal airport. Weather varies between the two airports, so weathermen-firemen report wind, temperature, altimeter settings and other information on their truck-to-aircraft radio near the runway.

"All our firemen here have been trained by the government in weather observation," R. M. Weaver, supervisor of plant protection for this TWA overhaul base, says. "We're a certified Supplementary Airways Weather Reports station."

Every hour firemen take weather readings at the fire house. They measure overcasts, using balloons in daylight and a high-intensity light at night. Information is phoned to the weather bureau at the Municipal Airport.

But the fire station at MCI is two miles from its 9,000 ft. runway. So the truck was rigged to analyze conditions at the touchdown point.

The truck weighs 36,000 lbs. Atop its mast shaft is the vane, with a tri-cupped anemometer whirling beside it. Crowning the mast is the radio aerial with which firemen transmit data to aircraft on 132.0 megacycles.

pollution control, to authorize greater federal leadership in combatting air pollution;

And reorganization of the U.S. Public Health Service with particular reference to community and environmental health programs.

Among financial proposals in his Budget Message, President Eisenhower recommended:

A $6 million budget increase to finance a new approach for "the joint use of urban planning grants and federal-aid highway research and planning funds for comprehensive metropolitan planning" and "to aid mass-transit planning";

Increased funds to CAB for safety activities; and to FAA for "strengthening enforcement of air safety regulations," expanded effort on research in "fire protection, structural soundness, collision avoidance," and expanded research on "those physical and psychological conditions which affect safety in flight";

Strengthened Food and Drug Administration through establishing and enforcing standards of safety for foods and drugs;

Increased funds to ICC for a larger number of safety surveys of motor carrier inspections and larger number of motor vehicle inspections;

Increased appropriation to the Bureau of Public Roads for research to "permit greater emphasis on the problems of urban highway development";

Increased funds to the Department of Labor "to expand maritime safety activities" but reduced funds for compiling industrial hazard data;

And a larger budget for the Public Health Service for accident prevention project grants, for air pollution research (with primary emphasis on auto exhaust studies), for increased emphasis on the problem of occupational health hazards of uranium mine workers, for major emphasis on research on radiation exposure levels, and for major expansions in community and environmental health programs.

Traffic Safety. In its Final Summary Report to President Eisenhower, The President's Committee for Traffic Safety stated "the nation is making positive gains in the endless fight against motor vehicle accidents," and the interest of the White House in traffic safety was "of inestimable value to the entire traffic safety movement."



The committee told the President "the concerted action by some 40 national organizations that have worked with the committee has brought about the most effectively coordinated accident prevention activity in the history of the traffic safety movement."

For the future, it attached much urgency "to the prompt manning and launching" of the Five-Year Plan for stepping up the effective application of the Action Program as a means of preventing traffic accidents which it called "Killer No. 1."

Although President Eisenhower and a staff study of the Senate Committee on Interstate and Foreign Commerce recommended establishment of a Department of Transportation, Secretary of Commerce Luther H. Hodges opposed this proposal.

Congressman Roberts reintroduced H.R. 341, to establish safety standards for federally-owned vehicles. Enactment of this bill, he said, "will help crack the resistance barrier the automobile industry has put up against safer-designed automobiles."

He also introduced: H.R. 129, to provide for the issuance of a special postage stamp in recognition of governmental and private efforts to promote highway safety; H.R. 134, to provide for safety standards for seat belts; and H.R. 133, to establish a National Accident Prevention Center (See "Wire," October 1959).

Other bills introduced at the opening of the 87th Congress included: H.R. 3083 (Roberts) to remove the limitations of time and funds on the present Federal Air Polution Control Act; and S. 455 (Kuchel and four other senators) to provide for public hearings on air pollution problems, to be conducted by the Public Health Service.

The Department of Defense issued regulations providing that military and civilian personnel who operate privately-owned motor vehicles on base are to be denied driving and parking privileges on military installations in the United States unless they possess minimum liability insurance (to be issued by an accredited insurer) in amounts not lower than the minimum limits prescribed by state law, where applicable, but no less than $5,000-$10,000 bodily injury and $1,000 property damage.

These regulations also provide that "installation commanders are responsible for administering an effective driver training program" and that "attendance of problem drivers may be made mandatory."

President Kennedy's Task Force on Housing and Urban development recommended, in connection with mass transit, immediate enactment of a program for planning grants and $100 million for public facility loans, along the lines of the Williams Bill, S.3278, passed by the Senate in 1960. (See "Wire," May and August, 1960), as well as establishment of a presidential study commission to determine future needs.

Senator Williams introduced S.345, a metropolitan transit bill for loans to communities to improve their transit facilities. The current bill includes a new proposal for a $75 million fund for experimentation, to permit actual tests of service improvement to see how they would affect riding volume.

At the Highway Research Board's 40th Anniversary Meeting, its chairman called for a greatly expanded program of research in social, economic, and legal problems facing highway transportation, including the effect of traffic on the driver's nervous tension.

The General Counsel of the U. S. Bureau of Public Roads urged prompt adoption by the states of adequate legislation to regulate out-

door advertising along the interstate highway system. A Bureau highway engineer said that comparatively simple traffic engineering techniques can vastly improve the traffic-carrying capacity of urban arterial streets. The chairman of NSC's Committee on Winter Driving Hazards, A. H. Easton, director of the motor vehicle research lab, University of Wisconsin, reported on the relative performance of snow tires and chains.

The director of the Transport Division of the U. N. Economic Commission for Europe announced the number of persons killed in road accidents in Europe had reached an annual rate of about 60,000. The largest single category of fatalities, 45 per cent, were composed of cyclists and motorcyclists.

According to the UN official, the number of accidents involving death or injury in Europe, per kilometer traveled by road vehicles, was triple that in the United States.

Commercial Transportation. Congressman Van Zandt called attention to what he alleged were "grade crossings that result from what has been termed an inexcusable disregard of duty by the Interstate Commerce Commission." He spoke of "the tragic developments which may very well be the result of the failure of the ICC to act."

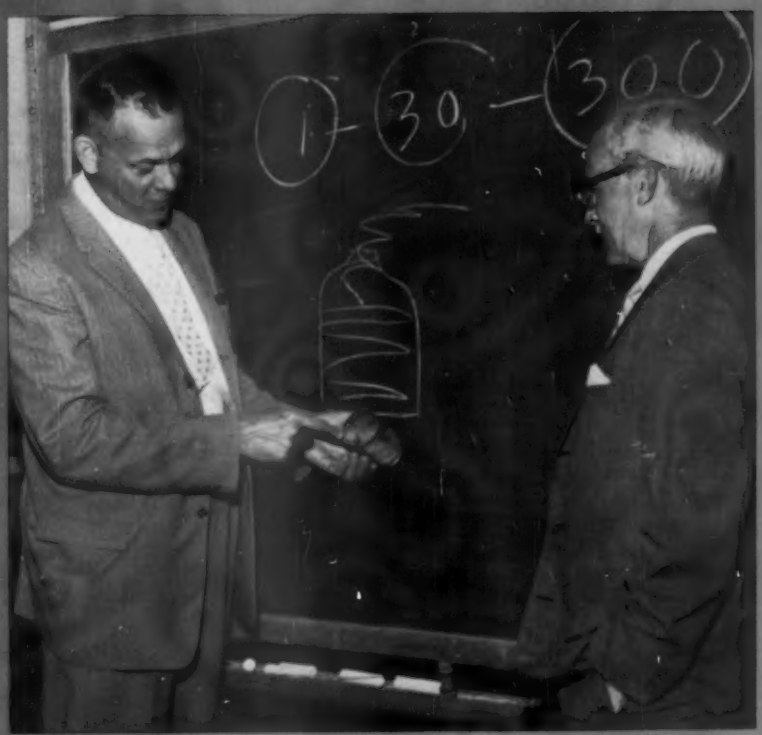
He urged that ICC act favorably on the request of railroad brotherhoods for a general investigation "to determine what could be done to prevent rail-highway grade crossing collisions with trucks hauling gasoline and other dangerous commodities."

In a motor carrier investigation report, the ICC again urged "that employee organizations join with management in efforts to achieve the maximum degree of safe operation of commercial vehicles" (See "Wire," November, 1960).

Aviation Safety. President Kennedy appointed N. E. Halaby as Federal Aviation Administrator and stated Halaby's job "will be to minimize the perils of the air space." The new official warned it will take "several years to modernize the airways to the point of maximum safety and efficiency."

Senator Monroney, chairman of the Senate Aviation Subcommittee,

Steel Exchange Pools Safety Data



One aim of the Steel Exchange is the pool of technical knowledge relating to safety. Here W. L. Jones, Jr., (left) Alan Wood Steel Co. and C. L. Hughes, Phoenix Iron and Steel Corp., exchange ideas on possible procedures for eliminating an existing accident hazard.

More effective accident prevention is the goal of a project involving steel companies from three eastern states.

Feeling that closer communication between safety men in related industries could result in better safety programs, representatives from New Jersey, Pennsylvania and Delaware steel companies met to exchange ideas, accident case histories and problems.

The result is the New Jersey-Eastern Pennsylvania-Delaware Steel Exchange. The group will hold four meetings annually, rotating the meeting place among member plants.

Should problems arise or useful information become available between these meetings, members correspond by letter or phone, keeping the flow of safety data up to date.

When unusual accidents occur in a member company, a report and steps suggested to prevent recurrence are issued to each member of the group.

Organizer of the exchange is Walter L. Jones, Jr., of Alan Wood Steel Co.

Other members include G. H. Montz, Colorado Fuel and Iron Co.; H. B. Jamieson, Midvale Heppenstall Co.; Peter Contardo, Roebling Div., Colorado Fuel and Iron Co.; Thomas Maloney, Jr., Birdsboro Steel Co.; Charles Wagner, Carpenter Steel Co.; Alden Thomas Colorado Fuel and Iron Co.; Frank E. Bird, Jr., Lukens Steel Co.; William A. Hallman, Alan Wood Steel Co.; and C. L. Hughes, Phoenix Iron and Steel Corp.

said enactment of his reintroduced bill for $100 million annual federal airport aid was essential to prevent aircraft crashes over major cities. A similar bill was vetoed by the President in 1958. At that time a senator, President Kennedy approved the $100 million figure.

FAA announced plans to study the flight paths of 40 jetliner trips prior to a recent midair collision in the New York City area, to determine whether pilots were engaging in dangerous practices. The Agency also issued a prepared Civil Air Regulation for safe operation when slush accumulates over airport runways.

In a summary report for 1960, FAA revealed: The 1960 rate on air transport safety was 1.0 per 100 million passenger miles flown, the first time since 1952 that the rate has been more than a fraction of 1.0. The 1959 rate was 0.7;

For general aviation, the estimated number of accidents was 4,600 as compared with 4,587 for 1957; the fatality rate was 20.6 per 100 million occupant miles flown;

And during 1960, 4,000 actions were taken by FAA to enforce safety rules. Civil penalties compromised and collected were 50 per cent greater than those in 1959.

Uniform standards for identification marks on fixed wing aircraft were issued by FAA. That agency solicited the cooperation of the aviation industry in the investigation of metal propeller fatigue failures.

Marine Safety. The U.S. Coast Guard announced that in the first half of 1960 there were 815 boating accidents involving 1,031 vessels. As a result, there were 261 fatalities, 274 injuries, and almost $1,100,000 in property damage. Of the accidents, 70 per cent were due to "human fault."

The AEC scheduled a hearing on nuclear safety aspects of the *N.S. Savannah*, the world's first nuclear-powered merchant ship. The hearing was held in advance of the start-up of the nuclear power plant on the vessel. Its purpose was to place on public record all facts relative to the nuclear safety of the ship during start-up, testing, and sea trials.

The AEC will consider this testimony in determining whether to authorize start-up, and whether there is reasonable assurance the plant may be safely fueled and tested at one or more locations.

The AEC released the report of the Advisory Committee on Reactor Safeguards which said "it would be imprudent" to operate the ship reactor at the start-up more than 10 per cent of full power, because the ship's reactor had not been extensively tested at full power or as a full prototype.

Public Safety. The U.S. Food and Drug Administration issued proposed definitions and procedural and interpretive regulations concerning color additives. The proposals establish safety factors. A color additive may not have a tolerance that will exceed "1/100 of the maximum no-effect level for the most susceptible experimental animals." Also considered will be the adequacy of methods used to demonstrate the additive's safety.

White House Conference on Aging. The White House Conference on Aging considered matters affecting the safety of the nation's senior citizens.

A "Background Paper on Health and Medical Care" noted accidents were the sixth cause of death for persons 65 years or older in 1957, with 26,800 fatal accidents to this age group in that year. The National Health Survey estimated that one out of every four persons in this age group suffers accidental injuries.

The "Background Paper" said "while the nonfatal injury rate is somewhat less for persons 65 or over than for persons of all ages, accidental death rates are more than three times as high for these older people than for people of all ages."

Among older people, 85 per cent of all accidental fatalities can be attributed to falls, motor vehicle accidents, and fire and explosion of combustible material.

"About six of every 10 fatal accidents to the aged resulted from falls." Injured females outnumber males by more than 2 to 1, and by 3 to 1 among those 70 and older.

The paper said: "The home is the frontier remaining in accident prevention at all ages." It specially pointed to good lighting, removal of fire and fall hazards, and provision of safety features. It called for continuing programs of accident prevention, and experimentation and research in accident prevention.

The Policy Statement – the Final Report of the Section on Health and Medical Care – concluded "both the aging group and the health professions must be cognizant of the importance of . . . the prevention of accidents."

A "Background Paper on Housing" called attention to difficulties caused for older people by scatter rugs, highly polished floors, glass towel rods, flimsy curtain rods, and unnecessary stairs and level changes.

The paper said: "Accident prevention takes on increased significance in the housing of the old, for failure in sight or hearing, unsureness of gait and sense of balance, unsteadiness of hand, and lapses of memory make for a higher incidence of accidents, particularly falls, among older people."

The Housing Section's Final Policy Statement urged revision and adjustment of zoning laws and building codes to "guarantee health and safety standards" for older persons.

The "Rehabilitation Background Paper" said "much could be accomplished in reducing disability due to accidents by the periodic inspection of homes and institutions to eliminate hazards." That section's Final Policy Statement urged "appropriate safety provisions for those older individuals with hearing loss should be incorporated in housing planning."

Dr. Norvin Kiefer to Chair 1962 Health Forum

"Accident Prevention and Emergency Care" will be the theme of the 1962 National Health Forum during the week of March 19 in Cleveland, Ohio. The National Health Council, sponsor of this event, announced Norvin C. Kiefer, M.D., chief medical director of Equitable Life Assurance Society of the U.S., is to be chairman.

Discussions of chronic problems in accident prevention and emergency care will include leaders representing the health field, industry, organized labor, farming, science, safety engineering, insurance, education and government.

OFF THE JOB

Planning safety programs for your plant and community



By PAUL E. SHEPPARD
Director, OTJ Safety Activities

NSC Surveys Industry Programs

A survey requesting information on off-the-job safety programs is being sent to all industrial members of the Council this month.

Many questions have been addressed to the Council which heretofore could not be answered with accuracy due to insufficient data. Fairly correct estimates could be made only in such general areas as the national frequency or number of off-the-job injuries per 100 employees.

It is hoped the response to this survey will provide definite facts to help council members not engaged in off-the-job programs by serving as a guide to development of more useful and effective materials.

The questionnaire has been divided into two sections. Section I is to be used by members already engaged in an off-the-job safety program. Questions are designed to determine when programs started, kinds of approaches used, and similar data.

Requested are: copies of programs, descriptive material and reports or recording forms promoting off-the-job safety; summaries of the number of on-the-job injuries with numbers of days lost due to such injuries; summaries of off-the-job injuries and days lost due to them; and average number of employees.

This information will help determine possible relationships between on- and off-the-job injury rates, showing on-the-job frequency rates can be improved as an off-the-job safety program is developed and put into action. Recently there has been increasing interest in the cost of off-the-job injuries. It is hoped members will make complete statements regarding these costs to provide basic information in this area.

Other parts of Section I are designed to gain general information to help solve various problems in starting and expanding off-the-job safety campaigns.

Section II is to be completed by companies not yet having a program. Answers to questions will determine the kinds of materials and information most needed by firms.

A summary will be published.



Get Your "Sign" Kit



Recently released is an NSC kit of materials on "Signs of Life" tailored for members looking for off-the-job promotional materials.

This kit has been a joint project of the Committee on Traffic Safety at Highway-Railroad Crossings of the Traffic Conference and the Railroad-Highway Safety Committee of the Railroad Section of the Industrial Conference.

New items makes this kit especially useful for an industrial off-the-job program on traffic safety.

The package contains 10 line drawings, with two-column newspaper ad mats and proof sheets of each that show what happens when traffic signs are ignored.

Other items include a large poster, display streamer, a window streamer and informational material on the "Signs of Life" program.

Although the number of kits is limited, single units can be obtained by contacting Jack Trimble, Traffic Operations, National Safety Council, 425 N. Michigan, Chicago Ill.

PERSONALS

ROBERT G. ALLEN, president of the Bucyrus-Erie Co., has been named chairman of the Industrial Safety Division of the Milwaukee Association of Commerce.

One of 13 association operating divisions, the group provides the committee leadership of personnel and safety directors of Milwaukee industries to conduct the annual Milwaukee Foremen's Safety School in the spring and the annual Fire Prevention & Plant Protection School in the fall.

Allen graduated from Harvard University and the Harvard School of Business Administration in Cambridge, Mass. He was elected to the House of Representatives from Pennsylvania's 28th district in 1937, and was a member of the House Foreign Affairs Committee.

From 1941 through 1945 he was president of Duff Norton Mfg. Co., Pittsburgh. After the war he served in various capacities with the Baldwin Locomotive Co. and the Great Lakes Carbon Corp.

Prior to 1957, Allen was president of Pesco Products and Wooster Div. of Borg-Warner Corp., in Bedford, Ohio.

At Bucyrus-Erie he was vice president until his present position as chief executive officer and president. Allen is also a director of the First Wisconsin National Bank of Milwaukee, Milwaukee Columbia Hospital, and the American Management Association.

HARRY D. HICKEY, has been appointed supervisor of safety for the Lackawanna, N. Y., plant of Bethlehem Steel Co. He succeeds EDWARD R. MCCUISTON, retiring.

Hickey was born in Bridgeburg, Ont., Canada, and attended the University of Toronto. He joined the firm's metallurgical department in 1939, became a safety supervisor in 1950, and a safety engineer in 1955.

The Pressed Metal Institute, Cleveland has announced appointment of JEFFERSON D. KEITH as managing director.

Keith has served as administrative assistant for the American Pulpwood Association, with the National Petroleum Association, and W. A. Penrose and Associates. He has been assistant executive vice president for the National-American Wholesale Lumber Association, and was also associated with the antitrust division of the U.S. Department of Justice.

He also has been a member of the NSC Pulp and Paper Section Executive Committee.

Keith received a bachelor of laws degree from the George Washington University after graduation from the University of Maryland.

ALVIN K. WAUGAMAN is now personnel manager for Mine Safety Appliances Company, Pittsburgh, Pa.

He will be responsible for technical, professional, and administrative recruiting; wage and salary administration; employee activities and communications; and special assignments in the personnel area.

Mr. Waugaman formerly was personnel director of McKinney Manufacturing Company, Pittsburgh. He has also been associated with Universal-Rundle Corporation.

CLARENCE J. MUTH has been named secretary of the Milwaukee Association of Commerce, succeeding Lester W. Brann, Jr., now executive vice president.

Muth served as manager of the association's air service division since its beginning in 1929 and as manager of the industrial safety division since May 1930. He will continue these duties.

As the association's secretary, Muth will act as Brann's assistant and will serve as secretary to the board of directors, finance committee, and executive committee. He will also supervise staff personnel and budgetary operations.



Robert G. Allen



Jefferson D. Keith



Clarence J. Muth

Oak Ridge Safety Chief Retires



Receiving congratulations on retirement after 27 years of government service is Norman H. Marsden (l), now former safety chief of the Oak Ridge branch of the AEC. Presenting the certificate of retirement is S. R. Sapirie, manager of Oak Ridge atomic plant.

NORMAN H. MARSDEN, associated with safety programs of the atomic energy industry since its inception, has retired after more than 27 years' government service.

Marsden, chief of the safety branch of the Atomic Energy Commission's Oak Ridge operations, joined the atomic energy program in 1943 with the Manhattan Engineer District, serving briefly in New York City and principally in Oak Ridge. He transferred to the AEC, when it assumed responsibility for the atomic energy programs in 1947.

During Marsden's supervision of the safety branch, many safety records were established, and the AEC and its operating and construction contractors received national safety recognition.

He has been a participant in the President's Conference on Industrial Safety and is a member of the American Society of Safety Engineers, having served as president of the Oak Ridge Chapter.

Marsden worked for three years on the publications committee for *NSC Safe Practice Pamphlets*. He also has taught courses in safety engineering in the Adult Education Program of the University of Tennessee.

C. MELVIN OLSON has been named supervisor of health and safety at the Niagara Falls plant of the Eastern Chemical Div., Hooker Chemical Corp.

Olson has been the plant's medical services supervisor, and was safety director at Oldbury Electro-Chemical Co. from 1942 until 1956, when that company merged with Hooker. Olson joined Oldbury in 1928 as a research chemist.

A graduate of Iowa State Teachers College with a degree in chemistry, Olson has also taken special safety engineering courses at Cornell University and University of Buffalo.

He is vice chairman of the Niagara Frontier Chapter of the ASSE, and is a member of the American Chemical Society, the Electrochemical Society, and the American Industrial Hygiene Association.

J. I. JORDAN has been promoted to Halliburton Company safety manager for field and shop operations. He replaces HARRY ZIEGLER, who retired after 34 years.

Jordan served with the company in various supervisory capacities, including district superintendent, before transferring from the field to the Duncay Safety Dept. in 1951.

Other promotions affecting the safety department are those of JIM PACE, former regional safety supervisor in the field, who has assumed duties as shop safety supervisor in Duncan, Okla., and JOHN R. BIRDSONG, who replaces Pace.

E. N. DAVIS is the newly appointed managing engineer, Chemical Dept., Underwriters' Laboratories, Inc., succeeding A. F. MATSON, retiring.

Davis joined the UL staff in 1937 as a rubber research chemist. In 1954 he was named managing engineer of the Inspection Control Dept., now combined with the Chemical Department.

He is a member of ASA, ASTM, and NFPA committees, serving as a specialist in insulated wires and cables, and rubber-lined fire hose.

Matson had been with UL for 41 years. Retiring also is CLAUDE BAWDEN, UL inspector at Columbus, Ohio, after 28 years with the firm.

Make Escape Plan For Fire in Home

Escape plans for fire emergencies have long been used in industry. Their necessity and effectiveness have been proved. Few however, have a clear idea of what their actions should be if fire strikes their *home*.

The basic rules to follow in home fires are: get everyone out of the house; and call the fire department. Only advance planning will assure that the first step will be accomplished.

As a guide to planning a home escape plan, the National Board of Fire Underwriters has made these suggestions:

Call a family council meeting and determine two possible routes from second floor bedrooms to the ground. If fire cuts off one exit, all members of the family will know an alternate way out.

Brief family on the basic dangers of panic in fires. On being awakened by smoke, for instance, rushing to fling open the door leading into the hall could result in severe burns or loss of consciousness from hot gases and toxic fumes.

Test the temperature of the door with your hand. If the door is hot, leave it closed. Go to the window and awaken people by shouting "Fire!"

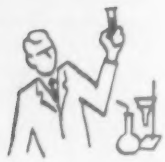
If the door is cool to the touch, open it slightly, keeping head aside and bracing door with foot. If the hallway appears cool, and flames or smoke do not block way to the stairway, it may be that this regular escape route can be used.

If the fire has already blocked the main stairwell, the alternate route may still be clear.

If all exits are cut off, the best procedure is to get to the window and breathe fresh outside air, leaving the room door closed. Call for help.

Should flames enter the room and necessitate jumping, drop bedding, clothing or pillows out the window first. Then lower yourself out the window to reduce the distance to the ground, and drop to the pile of bedding below. Jumping should be a last resort. Frequently, aid will arrive before this is necessary.

OCCUPATIONAL HEALTH



By J. T. SIEDLECKI, Industrial Hygienist, NSC

Abstracts of current literature on occupational hygiene, medicine, and nursing

Inhalation Toxcity Of Vinyl Chloride

"Acute Inhalation Toxicity of Vinyl Chloride to Laboratory Animals." By E. Mastromatteo, M.D.; A. N. Fisher, Ph.D.; H. Christie, B.Sc.; and H. Danziger, M.D. *American Industrial Hygiene Association Journal*, Volume 21, No. 5. October 1960. Pp. 394-398.

BECAUSE OF two fatalities which occurred in a plant handling vinyl chloride, the authors undertook acute inhalation studies on lab animals with commercially available vinyl chloride.

The lab animals—comprising five mice, five rats and five guinea pigs—were exposed in an inhalation chamber to concentrations of 10, 20, 30 and 40 per cent vinyl chloride for 30 minutes. Exposure to 10 and 20 per cent vinyl chloride in air produced deep narcosis but no deaths.

At 30 per cent the mice and rats were killed. At 40 per cent three out of the five guinea pigs survived. Pathological changes in dying animals and in the surviving animals are described.

The threshold limit value of 500 ppm. has been adopted by the American Conference of Governmental Hygienists.

Clinical Study Of Kaolin Workers

"A Clinical and Roentgenological Study of Kaolin Workers." By R. W. Edenfield, M.D. *Archives of Environmental Health*. Volume 1, No. 5. November 1960. Pp. 392-403.

THE AUTHORS felt that, because of lack of existing information, a study should be conducted on a large number of workers to determine the relation of kaolin dust exposure to pneumoconiosis.

Of the 2,000,000 tons of kaolin produced annually in the United States, more than half is used in the paper industry. The demand for kaolin is continuing to grow in a variety of other industries: rubber, ceramics, plastics, adhesives, paint, fertilizers, and insecticides.

Because of its absorptive capacity kaolin is used in medicinals for the treatment of diseases, such as bacterial food poisoning, bacillary dysentery, ulcerative colitis and certain other diarrheal disorders. Kaolin is a form of hydrated aluminum silicate. It is extremely inactive chemically, being insoluble in water and in most other solvents.

Studying the occupational health history of 1,130 workers in the various kaolin plants and mines of Georgia during a period of five years, the authors found that 44 persons showed some evidence of pneumoconiosis. These conclusions resulted from this study:

1. Lung disease in the pilot group is not significantly higher than in the general population.
2. Lung changes seen in the kaolin workers do not represent a form of silicosis. Uncomplicated kaolin pneumoconiosis appears to be due to retention in the lungs of finely divided kaolin which is almost completely inert.
3. Clinical and experimental studies indicate the combination of tuberculosis and heavy dust exposure is the causative factor in cases showing progressive massive fibrosis.

Workers should not be exposed to kaolin dust concentrations greater than 50 million particles per cubic foot. The author indicates that with continued dust control engineering, kaolin pneumoconiosis should disappear entirely.

Calibration of Gas Dectecting Tubes

"Calibration and Evaluation of Gas Detecting Tubes." By H. L. Kusnetz, M.S.; B. E. Saltzman, Ph.D.; and N. L. Lanier, B.A. *American Industrial Hygiene Association Journal*, Volume 21, No. 5. October 1960. Pp. 361-373.

THIS IS a review of the accuracy and reliability of seven direct reading Rh colorimetric gas detecting devices available in this country in kit form.

Theory of tube calibration is discussed along with problems involved in objective tube evaluation. Various techniques of calibration are presented. Results of tests on specific gases of the various detecting devices are tabulated.

The authors have formulated this conclusion: "The present state of gas detecting tubes is that they are, in general, semi-quantitative devices quite useful in screening preliminary survey work.

"Use of these tubes in the interpretation of the results obtained by such use should be made by a qualified industrial hygienist, aware of the toxicity of the contaminates involved and of the tube performance. Where facilities and trained personnel are available, calibration of the tubes and auxiliary equipment should be made before their use."

Primary Heritan Nature of Cement

"The Primary Heritan Nature of Cement." By G. E. Morris, M.D. *Archives of Environmental Health*, Volume 1, No. 4. November 1960. P. 301.

THE AUTHOR reports on two cases of ulcers in the ankle area resulting from cement in contact with the skin for one day. Cement dermatitis has been known for years, but there has been no adequate proof that sensitization to chromate or di-chromate is the major factor.

Respiratory Disease Of Bagasse Workers

"Respiratory Disease of Bagasse Workers." By N. Bayonet, M.D., and R. Lavergne, M.D. *Industrial Medicine and Surgery*, Volume 29, No. 11. November 1960. Pp. 519-522.

THE AUTHORS describe 69 cases of respiratory disease among bagasse workers in the paper mill of Grace and Company at Arecibo, Puerto Rico.

(Bagasse fiber is the waste product remaining after the extraction of juice from sugar cane. It is used in the manufacture of commercial paper or corrugated board.)

During early January to late May, the sugar grinding season, fresh bagasse is carried by conveyor from the sugar mill to the paper mill for pulping, refining and paper making. The excess bagasse is bailed and stored outside in unprotected areas.

During the non-grinding season the bundles of baled bagasse are brought into a debaling area to be used by the paper plant. During the storage period, bagasse has dried and fermented. Many fungi have grown or developed.

This plant began its operation in January 1959. The first case of respiratory disease alleged to have been caused by the inhalation of dust from bagasse used in the plant occurred in June 1959.

Symptoms are chest pain, shortness of breath, sore throat, cough with expectoration, rapid loss of weight, fatigue and low grade fever. The X-ray shadows are similar to that seen in acute milia tuberculosis.

The time of exposure varied from two weeks to four months. The concentrations are not reported in the paper, but the authors indicate the concentration of dust has no bearing on the appearance of the disease.

Out of 140 exposed workers 69 definitely contracted the disease. It appeared that only dried bagasse stored in the fields caused the disease. No cases were reported in the bagasse warehouse or sugar mill where bagasse was stored for use as fuel.

The authors conclude that, etiology of the disease remains obscure. No causative agent such as bacterial, mycotic or other has been detected.



Lifesaver Smith (r.) receives award.

Learns Lesson, Saves Life

Taught the mouth-to-mouth resuscitation method only a week before, D. L. Smith, groundman for the Jacksonville, Fla., Utilities Department, used the technique to save a fellow worker's life.

The victim, 38-year-old lineman Marvin Cumbie, Jr., had cut into a hot 2400-volt line, while working on a transformer pole.

Smith helped lower the unconscious Cumbie to the ground and immediately began mouth-to-mouth respiration. After about a minute, respiratory paralysis was overcome. Cumbie was taken to a hospital for treatment of burns received at the time of shock.

In recognition of his action, Smith recently received the National Safety Council's President's Medal.

Grinding Wheel Standard

New ASA standard specifications concerning grinding wheels have been issued as *American Standard Specifications for Standard Shapes and Sizes of Grinding Wheels, B74.2-1960.*

The standards classify, according to 12 end use categories, the shapes and sizes of grinding wheels considered standard by industry. A shape and size of a wheel have been included only after determining whether or not it was designed, dimensionally, to perform the job for which it was intended.

The new publication supplements and replaces the prior publication *Standard Shapes and Sizes of Grinding Wheels, Simplified Practice Recommendations, R45-57.*

Print Chimney Check Cards

The Greater Cincinnati Safety Council recently reported the activities of a "check your chimney" committee. The major activity of the committee has been to print and distribute more than 100,000 cards outlining safety precautions in connection with heating equipment. It is suggested the card be hung near home heating equipment. Each card outlines a simple chimney check, including cleaning, testing for proper draft and examination of the vent pipe.

The council feels the program, instituted five years ago, has been successful in reducing carbon monoxide accidents. The cards are supplemented by publicity in television, radio and in newspapers and posters.

Sioux Falls Police Public Relations Program

The Police Department of Sioux Falls, S.D., is currently conducting several activities designed to educate the public about the department and its program of accident prevention.

Posters, similar to the widely-known "wanted criminals" posters, are being distributed. The poster contains the picture of a young boy and girl under the headline "WANTED ALIVE." The wording explains the normal activities of children, and at the same time indicates they are carefree and harmless, but unfortunately easily harmed. The poster asks the reader to let them get to school and home again without an accident.

Their local paper is running a "Know Your Policeman" series introducing members of the department, briefly describing their backgrounds and indicating their particular duties.

The department also has its officers make personal contact with each new resident reported by utility companies. The officer gives the new resident printed matter on child molestation, driver licensing and other pertinent subjects.

The President's Medal

Awards made by the National Safety Council for successful application of artificial respiration



HENRY E. ALTENBURG, Medical Co., U.S. Army Hospital, Ft. Gordon, Ga. – drowning.

CLARA M. PURVIS, Augusta, Ga. – drowning.

WILLIAM H. GRIFFIN, Griffin Electric Co., Harlem, Ga. – resuscitation after electric shock.

W. C. WALLACE, repairman, Transcontinental Gas Pipe Line Corp., Eunice, La. – resuscitation after suffocation.

JIMMIE B. DYKES, line crew groundman, Florida Power Corp. – drowning.

GARY THOMAS EDWARD REID, student, Kingston, Ontario, Ca. – resuscitation after carbon monoxide poisoning.

HENRI HOUDE, Shawinigan Water and Power Co., Valleyfield, Quebec, Ca. – drowning.

STEVENS V. FOSTER, Westinghouse Electric Corp., Micarta Div., Hampton, S.C. – drowning.

HORACE W. GRAY, service dispatcher, Kentucky Utilities Co., Lexington, Ky. – resuscitation after accidental hanging.

ERNEST VACARRL, machine operator, Milwaukee Gas Light Co., Wis. – resuscitation after smoke inhalation.

EARL BALLOU, millwright foreman, The Quaker Oats Co., Sherman, Tex. – electric shock.

VINCENT MELLOTT, student, North Lima, Ohio – drowning.

W. M. STOCKSTILL, drilling and production foreman, Texaco Inc., Domestic Producing Department, New Iberia, La. – drowning.

DIAMOND HARDCASTLE, pitman, Kennecott Copper Corp., Utah Copper Div.' Mine, Sandy, Utah—drowning. Certificate of Assistance—J. IRA HARDCASTLE.

HOOVER H. REESE, meter reader, Alabama Power Co., Northport, Ala.—resuscitation after convulsion.

JAMES B. CHARLES, lineman, Arkansas Power and Light Co., Little Rock, Ark.—electric shock.

A. A. MILLS, Mississippi Power Co., Gulfport, Miss.—electric shock. Certificates of Assistance—R. L. MAPP and JACK SMITH.

LEONARD P. KELCH, line foreman, Central Power and Light Co., Corpus Christi, Tex.—electric shock.

CHARLES E. NELSON, lineman, Ft. Wayne City Utilities, Ft. Wayne, Ind.—resuscitation of lightning-struck victim.

FRED P. MILLER, boat dock operator, Memphis, Tenn.—drowning.

HOWARD G. WEBER, meter reader, Wisconsin Public Service Corp., Menominee, Mich.—drowning.

AIME GALLANT, station operator, Central Maine Power Company, Skowhegan, Maine—electric shock.

EDWARD P. ASID, repairman, The Southern New England Telephone Company, North Haven, Conn.—asphyxiation.

LELAND D. FOOS, lineman, Northwestern Public Service Company, Madison, S.D.—drowning.

GEORGE HOLMES, laborer, Cities Service Oil Company, El Dorado, Kan.—electric shock. Certificate of Assistance—James R. Lill.

AARO RASI, representative, Texaco Canada Limited, Sudbury, Ont., Canada—drowning.



Receiving an NSC President's Medal for his quick action in a rescue from drowning is Fred P. Miller (second from left), boat camp operator at Lakeview, Miss. Miller dragged out drowning swimmer, Jerry Gilbert (second from right), and used the back pressure method of artificial respiration to revive him. Presenting the award are Fred Wainwright and E. R. Stevens, of the Memphis-Shelby County Safety Council.

AWARD OF MERIT

Aluminum Company of America (2): Alcoa Smelting Div., Alcoa, Tenn.; Cleveland Works.

Aluminum Company of Canada, Ltd., Shawinigan, Que., Smelter.

American Airlines, Inc., Syracuse, N.Y.

American Can Co., Oakland, Calif., Plant, 99-A.

American Can Co. of Canada Ltd., Montreal Plant, 31-A, Montreal, Quebec, Can.

The American Sugar Refining Co., Chalmette Refinery, Arabi, La.

American Viscose Corp., Parkersburg Plant, W. Va.

Atlantic Coast Line Railroad Co., Transportation Dept.

The Atlantic Refining Co. (2): Philadelphia Refinery, Philadelphia, Pa.; Atreco Refinery, Port Arthur, Tex.

Argonne National Laboratory, Argonne, Ill., and Idaho Falls, Idaho.

Behlen Manufacturing Co., Inc., Columbus, Neb.

The Bendix Corp., York, Pa., Div.

Boeing Airplane Co., Vertol Div., Morton, Pa.

The Brush Berryllium Co., Cleveland, Ohio, Plant.

The Budd Co., Chase Plant, Gary, Ind.

Celanese Fibers Co., Celriver Plant, Rock Hill, S. C.

Charleston & Western Carolina Railway Co. (Atlantic Coast Line System).

Chrysler Corp., Parts & Equipment Manufacturing Div., Highland Park Plant, Detroit, Mich.

Compania Minera Asarco. S. A., Chihuahua Plant.

Congoleum-Nairn Inc., Wilmington Plant, Wilmington, Del.

Continental-Emsco Co., Houston Plant, Houston, Texas.

Continental Oil Co., Baltimore Petrochemical Plant, Baltimore, Md.

Creole Petroleum Corp., Caripito Refinery, Caracas, Venezuela.

Crown Zellerbach Canada Limited, Ocean Falls Div., B. C.

Du Pont of Canada Limited, Maitland, Ont. Works.

Ford Motor Co. (4): Dearborn Engine Plant, Engine and Miscellaneous Departments, Steel Div.; Cleveland Engine Plant No. 1, Engine and Foundry Div.; Highland Park Tractor Plant, Tractor and Implement Div.; Indianapolis Plant, Transmission and Chassis Div.

General Electric Co. (7): Large Steam Turbine-Generator Dept., Schenectady, N. Y.; Murfreesboro Plant, Murfreesboro, Tenn.; Microwave Laboratory, Palo Alto, Calif.; Parts Distribution Center, Zanesville, Ohio; Household Refrigerator Dept. and Air Conditioning Dept., Louisville Oper., both of Appliance Park, Louisville, Ky.; Atomic Power Equipment Dept., San Jose, Calif.

General Foods Corp., Post Div., Kankakee Operations, Ill.

W. R. Grace & Co., Cryovac Div., Simpsonville, S.C.

Hammermill Paper Co., Finishing Div., Erie, Pa.

Hughes Aircraft Co., Ground Systems Group, Fullerton, Calif.

Illinois Central Railroad (2): Chicago; Kentucky Div.

International Harvester Co., Farm Equipment Research and Engineering Center, Hinsdale, Ill.

Kaiser Aluminum & Chemical Corp., Permanente Foil Plant, Permanente, Calif.

Kennecott Copper Corp., Utah Copper Div. Smelter, Magna, Utah.

KVP Sutherland Paper Co., Sutherland Div., Division 2, Kalamazoo, Mich.

Lockheed Aircraft Corp. (3): Missiles and Space Div., Vandenberg Air Force Base, Calif.; Missiles and Space Div., Sunnyvale, Calif.; Missiles and Space Div., Palo Alto, Calif.

McLouth Steel Corp. (2): Detroit Plant, Detroit, Mich.; Detroit-Trenton-Gibraltar, Detroit, Mich.

National Aeronautics and Space Administration, Ames Research Center, Moffett Field, Calif.

National Lead Co. of Ohio, Feed Materials Production Center, Fernald Area, AEC, Cincinnati, Ohio.

Nekoosa-Edwards Paper Co., Port Edwards Mill, Port Edwards, Wis.

The Newburgh and South Shore Railway Co., Cleveland, Ohio.

Nippon Petroleum Refining Co., Ltd., Yokohama Refinery.

Pacific Cement & Aggregates, Inc., Centerville-Plant #106.

Pennsalt Chemicals Corp., Cornwells Heights Plant, Pa.

Portland Gen. Electric Co., Portland, Ore.

Potlatch Forest's Inc., Bradley-Southern Div., Southern Plant, Warren, Ark.

Potoma Electric Power Co., Washington, D. C.

Pullman-Standard, Div. of Pullman Inc., Pullman Car Works, Chicago, Ill.

Rayonier Inc., Jesup, Ga., Div.

Schmidt & Ault Paper Co., Div. St. Regis Paper Co., York, Pa.

Shell Chemical Co., Shell Point Plant, Pittsburg, Calif.

St. Regis Paper Co., Deferiet, N. Y., Mill.

Southern Pacific Co. (Pacific Lines), Los Angeles.

Sylvania Electric Products, Inc., York Parts Div. Plant, York, Pa.

Thiokol Chemical Corp., Longhorn Div., Marshall, Tex.

Tooele Ordnance Depot, Tooele, Utah.

Union Carbide Chemicals Co. (2): Technical Center, South Charleston, W. Va.; South Charleston Plant, South Charleston, W. Va.

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1. Award of Honor
Available to (a) units which complete 3,000,000 man-hours without a disabling injury, and (b) units whose records, though not perfect, meet exacting standards. These standards take into account the previous experience of the unit as well as the experience of the industry in which it operates. A unit must qualify on both frequency and severity rates.

2. Award of Merit
Has similar but less exacting requirements. Minimum number of man-hours is 1,000,000.

3. Certificate of Commendation
For injury-free records covering one or more calendar years and totaling 200,000 to 1,000,000 man-hours.

4. President's Letter
For injury-free records covering one or more calendar years and totaling less than 200,000 man-hours.

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TECHNICAL SERVICE

DATA SHEET 501

CUTTING OILS, EMULSIONS, AND DRAWING COMPOUNDS

Copies of this data sheet available within 30 days.

Introduction

1. This data sheet discusses cutting oils, emulsions, and drawing pastes or compounds that are used in metal cutting and drawing processes. Emphasis is placed on those skin irritations (dermatoses) sometimes caused by exposure to such coolants and lubricants. Methods of preventing these skin disorders and recommended hygienic practices are covered.

Uses

2. Cutting oils, emulsions (also called lubricants or coolants), and drawing pastes or compounds are used in metal cutting and drawing processes for these purposes:

a. To cool the cutting tool and the work.
b. To reduce friction between tool, chip, and work.
c. To produce a smooth finish on the work.
d. To flush out the cutting area and wash away chips.
e. To protect the finished work from rust and corrosion.

Types

3. Cutting oils may be of animal, vegetable, or mineral origin; frequently, they are a mixture. They may be classified as either soluble or insoluble. The soluble cutting oils usually contain mineral oil, soap, and a preservative component such as cresol, phenol, glycol, alcohol, or nitrobenzene. They are used primarily as coolants and secondarily as lubricants.

4. Insoluble cutting oils usually consist of fatty oils such as lard oil and petroleum oil or a combination of the two. They may be sulfurized with free or combined sulfur, or they may be chlorinated or sulfochlorinated. They may contain an inhibitor which generally is one of the amines. They are used primarily as lubricants.

This data sheet is one of a series published by the National Safety Council, reflecting experience from many sources. Not every acceptable safety procedure in the field is necessarily included. This data sheet should not be confused with American Standard Safety codes, federal laws, insurance requirements, state laws, rules and regulations, or municipal ordinances.

Physiological Aspects

5. Cutting oils and compounds are frequently blamed for almost every kind of skin disorder which occurs among metalworkers using them. Generally, however, cutting oils and compounds become a source of skin trouble chiefly after they have become contaminated through poor personal hygiene habits on the part of the workmen (such as spitting into the coolant) or through contact with machine parts or other items in the working environment. When infection occurs, it is usually secondary.

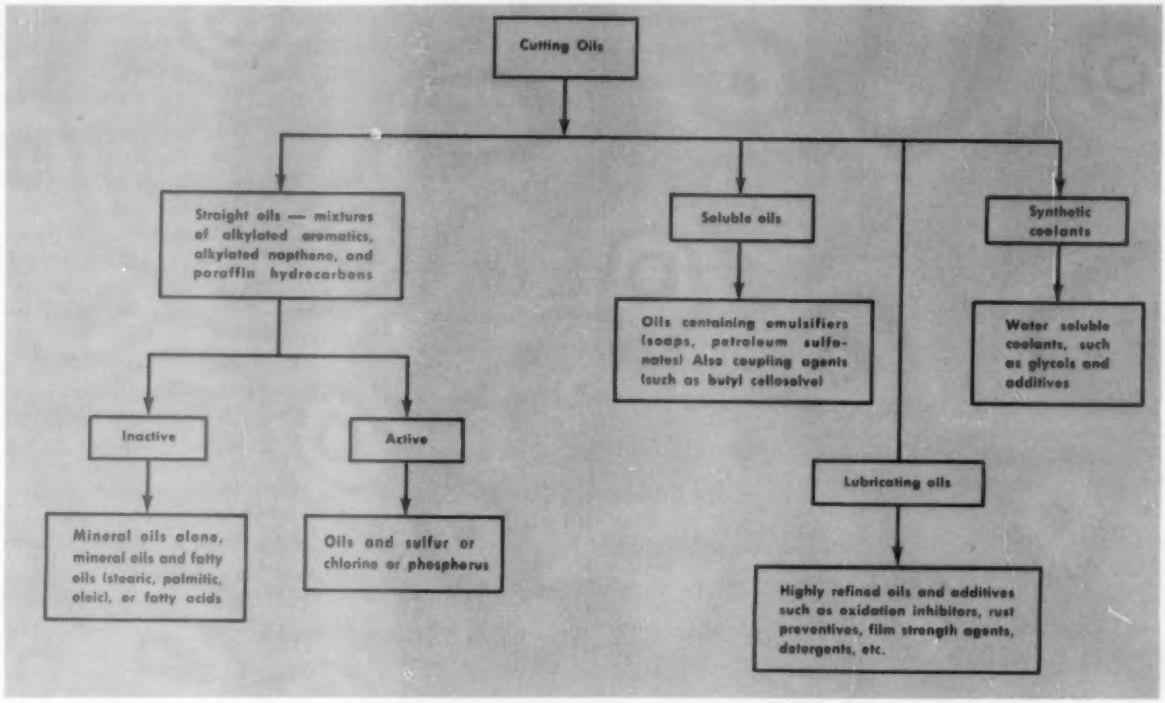
6. Following are the primary effects which cutting oils may have on the skin:

a. Mechanical plugging of the pores may occur, with resultant formation of comedones or blackheads.
b. Defatting action may cause drying and cracking of the skin, so that it becomes more subject to abrasions or secondary infections.
c. If metal slivers in used cutting oil or in soiled wiping cloths or toweling become imbedded in the skin, secondary infections may result.
d. Some sulfur, chlorine, or other additives may be present in sufficient amounts to cause skin irritation or sensitization. Chlorinated aromatic organic compounds may cause chloracne but chlorinated paraffins and paraffinic materials are relatively free from systemic or dermatological effects.
e. Inhibitors (germicides), although generally not present in primary irritant quantities, may act as sensitizers.
f. Some cutting oils have been suspected of being capable of causing premalignant skin lesions.

7. When there is excessive or prolonged exposure to contaminated cutting oils, good hygiene is not practiced. Several types of dermatitis can develop: oil acne or folliculitis, oil dermatitis, cracking of the skin with resultant infections, skin pigmentation, and chloracne.

Oil Acne or Folliculitis

8. Oil acne or eczema-like inflammations are the most common forms of dermatitis affecting machinists and other workers exposed to contact with cutting oils and emulsions. As might be expected, the skin exposed on portions of the



forearms is most frequently affected.

9. In mild cases, the skin is marked with numerous blackheads and inflamed spots. In more severe cases, these red spots or blotches turn into pimples which become boils or festering sores. Sometimes these pimples and boils also occur on the legs, thighs, and other parts of the body in contact with oil-soaked clothing. The exact reasons for these manifestations are not entirely understood, but it is believed that the pores in the skin are either blocked or contaminated so that they cannot function normally.

10. Contact with the oil does not have the same effect on all workers. Many appear to be altogether immune and never experience the slightest irritation. Some men may work on cutting operations for years with only an occasional irritation. Some will get the blackheads on their arms, but not the pimples. The arms become covered with blackheads within a few weeks after contact with oil, and in a comparatively short time numerous pimples and boils appear on the exposed skin surface.

11. These differences are largely due to variations in personal cleanliness and in skin resistance. Persons who have excessively dry skin, which easily becomes chapped and cracked, are susceptible to dermatitis resulting from the defatting action of mineral oils.

12. A number of medical authorities have also pointed out that light-skinned persons are more susceptible to cutting oil dermatitis than are dark-skinned persons. However dark, hairy, and oily skin, though better able to withstand the action of solvents, for two reasons is predisposed to the development of oil acne. This type of skin has highly active sebaceous or oil glands, and the numerous hair follicles provide settling points for cutting oils making removal of such cutting oil difficult.

Oil Dermatitis

13. A certain percentage of workers may develop an inflammation of the skin. It is characterized by redness and swelling and may result from:

a. Continuous exposure to moisture.
b. The alkalinity of the emulsion.
c. An excessive amount of germicide in the oil.
d. An allergy to some ingredient in the oil or emulsion.

14. If the offending agent is found to affect a number of employees, consideration should be given to removing the material. On the other hand, if only a few employees are affected, consideration should be given to placing the employees on a job where they would not come in contact with the oil.

Infections

15. A highly important factor in the development of the skin troubles to which cutting machine operators are subject is the mechanical injury caused by metal chips and particles. When a deep, heavy cut is made on metal, hot chips with sharp ragged edges fly off and frequently strike the hands and arms of the operator, cutting the skin and leaving openings for bacteria. In lighter cutting, numerous fine particles of metal are taken up and carried by the oil to the workmen's hands and arms, especially when the oil is used over and over without being filtered.

16. If the skin is rubbed (for instance, the skin between the fingers) or if the operator wipes the oil from his arms and hands with a rag or piece of cotton waste—a common practice – these particles scratch the skin and make many small openings which will permit bacteria to get into the tissues and cause infection. It should be emphasized that it is not the bacteria present in the cutting oil that causes dermatitis. Defatting of the skin so that the skin cracks open or scratching with metal particles allows bac-



Figure 1. In severe cases of chloracne, red spots or blotches turn into pimples which can become boils or festering sores.

teria to penetrate, causing infection.

17. Two types of germs capable of causing infection, streptococci and staphylococci, are normally present on the skin. Streptococci are harbored in protected skin crevices. They are rarely found in oil dermatitis, although they may act as secondary agents. Staphylococci are much more prevalent on the skin and constitute the primary infective organisms. Although these germs are on the skin of everyone most of the time, they ordinarily do no harm because they cannot penetrate a healthy, unbroken skin. When the skin becomes inflamed, scratched, or broken, however, they can cause infection.

Warts or Premalignant Skin Lesions

18. Flat warty-like growths generally evidenced by thickened brown patches somewhat similar to callouses may occur on the skin areas frequently in contact with mineral oils. These growths rarely cause trouble or even discomfort.

Lipid Pneumonia*

19. The question of the production of a pneumonia or pneumonitis from oil mist frequently arises. Although the opinion that these conditions could perhaps result from exposure to oil mist has been expressed, such a cause and effect relationship has not been proved by reliable clinical or laboratory tests.

*P. J. Proudfit, H. S. Van Ordstrand, C. W. Miller, "Chronic Lipid Pneumonia Following Occupational Exposure," *Archives of Industrial Hygiene and Occupational Medicine*, Vol. 1, page 105 (January, 1950).

Hygienic Practices

20. Employees should be thoroughly trained in the hygienic practices described in the following paragraphs, and supervisors should maintain a constant check to see that these practices are observed.

Personal Cleanliness

21. The importance of personal cleanliness as a means of preventing skin troubles from cutting oils and compounds cannot be overemphasized. By frequent and thorough cleansing of the hands and arms with soap, a soft brush, and hot water, employees can prevent to a considerable extent accumulations of oil and dirt in the pores of the skin and thus forestall inflammation. Such cleansing also will help to remove germs which may be on the skin.

22. Proper washing facilities with plenty of water, soap, soft brushes, and towels should be provided in convenient locations. The use of individual brushes and towels should be insisted upon. Hard stiff brushes which are likely to scratch the skin should not be used. Facilities which enable employees to wash in running water are more sanitary and satisfactory than washbowls or basins.

23. Soaps which are strongly alkaline or contain harsh abrasive grit, powerful bleaching agents, and solvents such as kerosene, gasoline, and chlorinated hydrocarbons should not be used for washing the hands and arms. Such agents have a harmful effect on the skin and in many cases have themselves caused dermatitis. Such solvents remove the natural oils from the skin.

24. Workmen should not be permitted to rinse their arms in a common bucket of solvent before washing.

25. If frequent thorough washing causes the skin to become dry and cracked, a hand cream containing lanolin should be applied to it after washing to replace some of the natural oils.

Protective Equipment and Clothing

26. On many operations, liquidproof aprons are almost a necessity to prevent the employees' clothing from becoming contaminated by coolant spurting or splashing from the tool. The apron strings must be of a material easily broken, in case the apron should become caught in moving machine parts. When employees handle sheet stock, they can wear leather hand pads for protection against cuts and scratches from sharp edges of the material.

27. In many plants operators are provided with special preparations to rub into their hands and arms before they start to work. Certain creams are not water soluble, being made specifically to protect against aqueous solutions. Some creams are soluble in water, so that while they protect the skin from insoluble cutting oil, they offer less protection where soluble cutting fluids are used. Moreover, some medical authorities have pointed out that if the cream film is broken, as by accidental contact with some object, the protection is greatly decreased. Since no cream will repel cutting oils, for any considerable length of time, routine use is of little value.

28. Employees should put on clean work clothes whenever necessary, at least once a week, and should keep them as clean as possible, being particularly careful to prevent clothing from becoming soaked with the cutting mixture. Since skin infections have resulted when workers have failed to remove oil-soaked work clothing at the end of the work day, employees should be encouraged to change into fresh clean clothing as soon as each shift is completed. Soiled garments should be thoroughly washed before they are worn again.

Wiping Material

29. The use of rags or pieces of waste for wiping the hands and arms is a highly objectionable practice. Such wiping cloths are generally kept on or around the machines or in the pockets of work clothes. These rags or pieces of waste are frequently loaded with chips and dirt, and in many cases contribute to the development of dermatitis. To control this problem, it is suggested that the workmen be supplied with disposable towels.

Reporting to First Aid

30. Workers who suffer cuts and abrasions should be required to report to the plant nurse, first-aid attendant, or plant physician at once for treatment, to prevent these skin openings from becoming avenues for infection. Employees who develop

skin disorders should likewise be required to report them promptly, and treatment should be given under the supervision of the physician.

Training and Inspection

31. It is highly desirable that management provide facilities for teaching employees personal hygiene, and the employer should insist on observance of the rules regarding personal cleanliness. Posters, leaflets, and bulletin board messages describing the sanitary measures necessary to prevent skin irritators and emphasizing the importance of personal cleanliness will be of service in educating the employee.

32. Such materials should also warn the employee against the danger of contaminating the cutting oil by spitting or throwing garbage or other contaminants into the machines, drains, or oil pans. Deliberate contaminating of coolants should be cause for disciplinary action.

33. In a large plant which employs many cutting machine operators, a capable person may be given the responsibility for making sanitary inspections of the shops, particularly with reference to the manner in which cutting oils and compounds are used and handled, and for enforcing such rules as may be required regarding the personal habits of the men. This person could also help the safety department or the medical department teach employees how to protect themselves against the skin disorders which may result from contact with cutting oils and compounds.

Methods of Control

34. Procedures to control dermatitis from cutting oils, emulsions, and drawing compounds include hygienic practices which are, by far, the most important: careful selection of the fluids, filtration, disinfection, use of splash guards and covers.

Selection of Cutting Oils

35. Cutting oils which do not permit bacteria to breed and which are nonirritating should be selected. Mineral oil, the principal ingredient of cutting oils, is not a source of germs and does not provide a suitable medium for germ growth. Even when small amounts of vegetable oils are added, the resulting mixture does not support bacterial growth to any appreciable extent.

36. Animal oils, however, do support mold and bacterial growth. Therefore, when they are used in cutting oils, the oil manufacturer usually adds an inhibitor, which slows down the rate at which the oils become rancid and usually restricts the growth of bacteria. However, in some cases the inhibitor itself is capable of causing dermatitis.

Filtration

37. Oil which has been used more than once or has been reclaimed from cuttings and shavings by centrifuging or magnetic process should be filtered to remove nonferrous metallic and other particles, which extends the life of both the cutting tool and the oil or emulsion. The type which best suits the needs of the individual plant can be selected from a variety of filter systems.

38. In some shops, the used oil is conveyed into a large settling tank where it is left for several days, during which time most of the chips and foreign matter will sink to the bottom. However, because of the viscosity of the oil, a great deal of the finer suspended matter will not settle out. This method, therefore, is less efficient than filtration or separation by centrifugal machine.

39. Settling tanks or sediment tanks are more often used for emulsions. Since these solutions contain water, metal particles or other foreign matter which may be carried into the sediment tank will readily sink to the bottom.

40. In large machine shops where one mixture is used for a number of machines, it is customary to install a circulating system for the cutting oils. The oil flows or is pumped from a supply tank directly to the machines and drains from the machines through pipes to a central collection tank.

41. Where a continuous circulating system is installed, it is highly desirable to include as part of the system a filtering and disinfecting unit so that oil which drains from the machines will pass through the filter and sterilizer before being pumped back to the supply tank.

42. Shops which do not have a continuous circulating system commonly use the batch filtration system. Once each week, or more often, the oil is collected from the base of each machine by a tank truck, from which it is run into a pipe outlet on the same floor and piped to the filter and sterilizer.

43. The oil is filtered, disinfected, and delivered to a clean oil pipeline with an outlet on each ma-

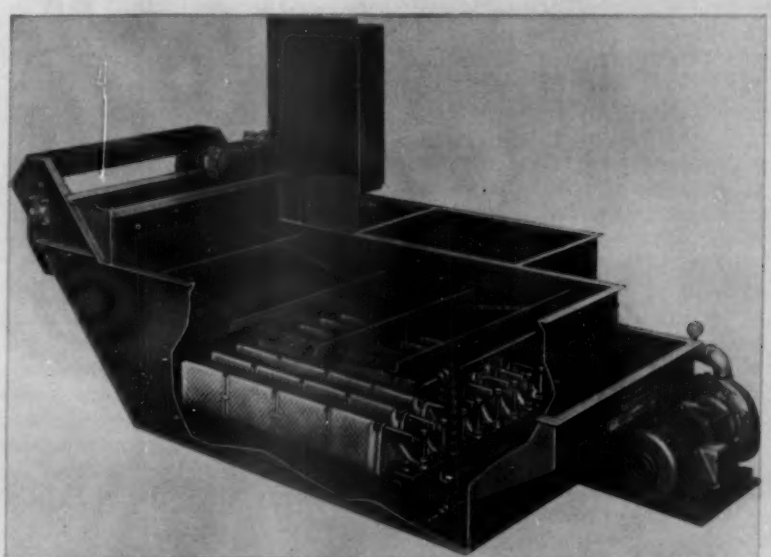


Figure 2. Automatic self-cleaning vacuum filter that can be designed to fit into space available. It provides a wide range of flow rates, and can be used for individual machines or central systems. Adaptable to various industrial coolants such as synthetics, soluble oils, mineral oils and other petroleum, it also provides automatic sludge removal. Typical applications include rough and finish grinding, turning, honing, gun drilling, broaching, boring, and solvent washing. (Courtesy Indiana Commercial Filters Corp.)

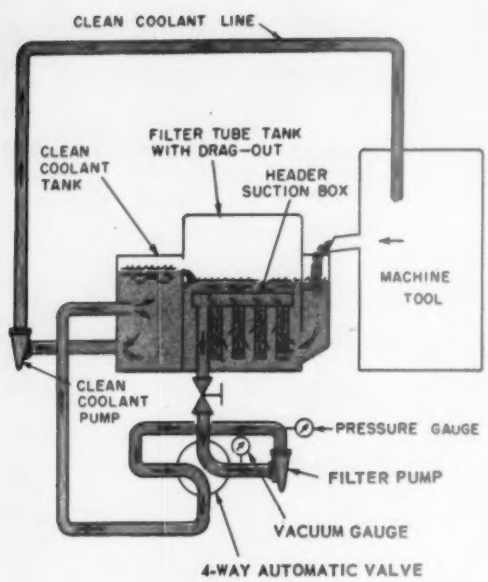


Figure 3. Two-compartment reservoir of a filter system—the filter tank and the clean oil tank. Unfiltered liquid from the filter tank is drawn by vacuum through either leaf or tube filter elements. Solids are deposited on the surface of the elements, and clean coolant is pumped through a four-way valve to the clean storage tank. As contamination deposits form a cake on the filter elements, the flow is restricted causing the liquid level in the filter tank to rise. (Courtesy Indiana Commercial Filters Inc.)

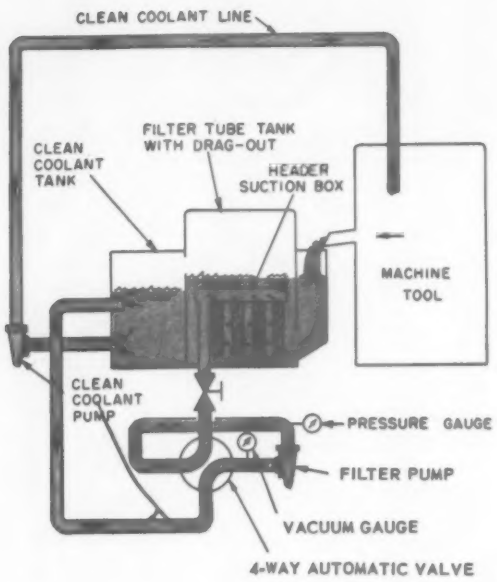


Figure 4. Action of the backwash cycle in a two-compartment reservoir. At a predetermined level, a timer control or float actuates a solenoid air valve which turns the four-way valve to reverse the liquid flow through the filter. Clean coolant backwashes deposits off the elements, and the chain driven flights remove the residue in the filter tank. By this arrangement, backwashing does not interrupt continuous flow from the clean tank to the machine tool. At the completion of the backwash cycle, filtration is automatically resumed. (Courtesy Indiana Commercial Filters Corp.)

chine room floor, from which the clean oil, under sufficient pressure to cause flow, is run into the clean oil compartment of the tank truck for delivery to each machine base.

44. The oil receptacles and pipes of the machine should be thoroughly cleaned each time the oil is removed. Filtering and disinfecting may be done when the plant is not in operation. The results obtained from the batch system will obviously depend upon the frequency with which the oil is removed from the individual machines for purification. However, where a central system feeds more than a few machines with soluble cutting oil, it is virtually impossible to disinfect all lines completely during the cleaning process, and some residual bacteria are introduced into the new coolant almost as soon as it is added.



Figure 5. The slide on the left shows cutting oil before sterilization; on the right, after sterilization. Sterilization reduces the number of bacteria in the cutting fluid.

45. It is possible to provide for continuous filtration on an individual machine by placing a small filter on it. Various machine tool builders are now equipping some of these machines with such filters.

Disinfection

46. Application of heat is one method for disinfecting cutting oils and emulsions. To heat the cutting mixture, it is the general practice to place steam pipes or coils in the reservoir into which the oil flows before or after being filtered. A temperature of 180 F for 25 minutes to one hour is used for cutting oils. Emulsions which break down at higher temperatures are held at 140 F for 30 minutes. Since disinfection is more likely to result at higher temperatures, emulsions which can stand the heat should be held to 180 F. In any case, recommendation of the manufacturer should be sought and followed in determining the best method of disinfection.

47. The second method of disinfection is the use of germicides. The manufacturer's instructions should be carefully followed to eliminate any possibility of using too much germicide which may cause the skin to react both physically and chemically.

Splash Guards and Covers

48. Splash guards attached to cutting machines will not only prevent the workers' clothing from becoming soiled but will also save oil. In addition, all tanks in which cutting fluids are stored should be kept tightly covered to prevent dust, dirt, and germs from entering them.

Fire Hazards

49. The use of cutting oils, emulsions, and drawing compounds may introduce certain fire hazards unless good housekeeping practices are followed. For control of fire hazards the recommendations of the National Fire Prevention Association bulletins for such installations should be followed.

ACKNOWLEDGMENT

This data sheet, which replaces Safe Practices Pamphlet No. 44, was prepared by the Health and Maintenance Committee of the Automotive and Machine Shop Section, National Safety Council. It has been extensively reviewed by members of the National Safety Council and representatives of the American Society of Safety Engineers. It has been approved for publication by the Publications Committee of the Industrial Conference of the National Safety Council.

A KEY IDEA IN BUSINESS-WRAPPED IN WOOD



Cellophane begins as wood fibre . . . emerges from this block-long casting machine as a completely new material. Pictured here, while visiting the plant, are Mr. Kling (right) with George Raese, an Employers Mutuals Accident Prevention Manager.



Periodic examinations for all employees are part of the comprehensive preventive program at Olin Mathieson's Pisgah Forest Plants. Dr. MacRoy Gasque (left) heads the Medical Staff there . . . works hand in hand with Employers Mutuals Medical Department directed by Dr. O. T. Mallery (right).

Wausau Story

by **ALAN L. KLING,** *Director of Loss Prevention, Olin Mathieson Chemical Corporation*

"Cellophane is wood—wood you can see through.

"But it takes some doing to convert trees into transparent film, as you'd see if you visited the Olin Mathieson cellophane plant at Pisgah Forest in North Carolina. In fact, our men there would tell you there could be no such material until scientists had developed the new field of cellulose chemistry.

"This is typical of many aspects of American business.

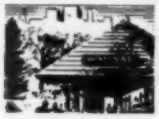
"Not long ago industrial accident prevention was a new field too. We started with the principle that accidents do not have to happen. To make that idea practical here at Olin Mathieson, we coordinated the safety activities of the entire company into a Department of Loss Prevention. Our effort is devoted to the safety and health of our people as a basic responsibility of management.

"The key idea is in the organization and function of this Department. One reason it has proved successful is that our staff can get the help they need from Employers Mutuals of Wausau. That help has saved us time and money too. Employers Mutuals people make this their business . . . and they're 'good people to do business with'."

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WHO is girdling the globe with communications for America's first man into space?

WHO tapped the sun for electric power by inventing the Solar Battery?

WHO used the moon for two-way conversations across the country?

who?

WHO guided Tiros and Echo into accurate orbit?

WHO made your pocket radio possible by inventing the Transistor?

WHO maintains the world's largest, finest industrial research facilities?

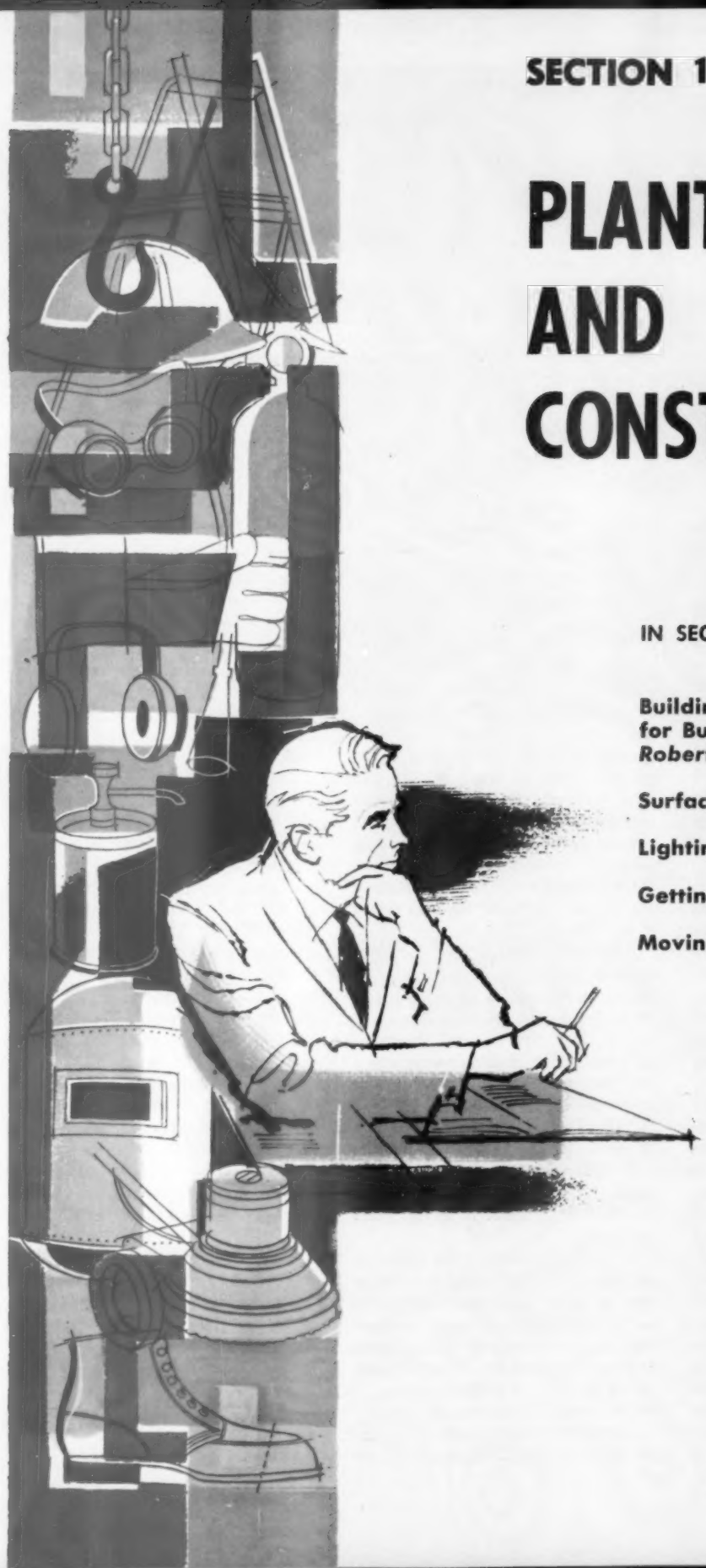
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SECTION 1

PLANT DESIGN AND CONSTRUCTION

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Building Surge Opens Way for Built-In Safety

By ROBERT L. MOORE



Robert L. Moore is superintendent of engineers, Lumbermens Mutual Casualty Company. He is a fellow of the American Society of Civil Engineers and is general chairman of the Construction Section of the National Safety Council. He has served as chairman of the Subcommittee on Construction for the National Association of Mutual Casualty Companies. He has also been a senior engineer on the industrial staff of the National Safety Council.

AN UNPRECEDENTED dollar volume of new construction, totalling $57.3 billion, is scheduled for the United States in 1961. This will be an all-time high in value of new construction put in place, representing a 4 per cent rise above the 1960 figure of 55.1 billion.

Industrial building will come in for its proper share of the year's record dollar volume. It is anticipated that $3.1 billion is to be spent in this field during 1961, adding a 7 per cent gain to last year's totals. This upward surge marks a continuation of upswing in the plant and equipment cycle that began after the 1958 recession.

Recognizing construction as one of the most important industries in the nation, safety engineers and others interested in accident prevention are vitally concerned when they hear the dollar volume of construction is high.

This usually is a reliable indication the economy of our country will be at a similarly high level. For when the economy is high, there are plenty of jobs for everyone, making the challenge greater for those engaged in accident prevention efforts.

In addition to promoting the safety of current work forces, an obligation exists to make certain safety will be a prime consideration in plant design and construction. There will be additions to the work force when new plants are completed. And these people must be protected "on paper" before they are subjected to operations within the new plant.

Consequently, safety planning in the blueprint stage is a must.

In construction operations, the solvency of a contractor depends on methods he chooses to complete the work for which he has contracted. He must do his best to do the job right the first time. He will have only one chance to construct a top-flight acceptable building. If the method chosen is right and correctly applied to the operation, there is sufficient reason to believe the job will be done without injury to workmen.

This same consideration for safety and proper work methods by the successful contractor has a parallel in the design phase of any project. In fact, this part of the overall problem in plant construction is probably much more important than the actual job of building.

The plant must be designed and properly planned for the people who will work in it and operations conducted in it. Safety must be built in when the project is in the blueprint stage.

We may have only one chance to enjoy the opportunity of moving into a brand new plant. Many of us may never have that experience but we may have the good fortune to have the plant in which we work modernized or remodeled.

It matters little whether safety problems involve a new or a remodeled plant. Regardless, we should get opinions and reactions of those operating and maintaining the work establishment.

To make sure safety becomes an essential part in the plans, there should be consultation with all personnel representing the safety, plant protection and industrial hygiene staff.

Just as the contractor with the job of building a beautiful new plant will follow plans and construct it as it appears on the blueprints, the architect, engineer and owner usually form a planning team having as its goal the proper, safe design of the plant to be built.

Even though plant operations are usually repetitive activities which can be changed after the new plant gets moving, it's folly to approach the problem in this manner.

Managements faced with new plant design and construction should take a tip from the contractor in forestalling problems initially. So to save the expense of later changes, it is the duty of management to mobilize the forces of those interested in building a safe, efficient plant.

Finally, if you have the safety responsibility in your plant but are being overlooked or by-passed as plans are developed for new construction or modernization, diplomatically demand the chance to express your thoughts on built-in safety. Then and only then can we be assured of safety in design and construction.

Surfacing for Safety

Is a "must" for floors in any plant

STRUCTURAL STRENGTH is the primary essential in any building, especially in multi-story operations, but floor surfacing materials should be particularly well selected to meet operating conditions and provide safety.

Chiefly through the small, abrasive wheels of hand and power trucks, plant floors receive from three-fourths to four-fifths of the frictional use of a building. A wrong choice of materials or faulty installation can result in flooring that will crack, break up or dust.

Get information. For a large installation, the company may call on a firm of engineers or architects or a reliable contractor. For the company which prefers to do the job itself, there is a wealth of information available. Much research on materials, installation, and maintenance has been conducted by government agencies, trade associations and independent laboratories. Nearly every type of flooring material has an association devoted to the product, and these can provide helpful information on materials, installation, and use. Sources of information include:

National Bureau of Standards.

Associations — Asphalt Institute, Asphalt Tile Institue, Maple Flooring Manufacturers Assn., Portland Cement Association, and Tile Manufacturers Assn.

Helpful data is also available from manufacturers' catalogs and their service departments.

Planning the Work

When installing new floors or replacing old ones, this procedure is suggested:

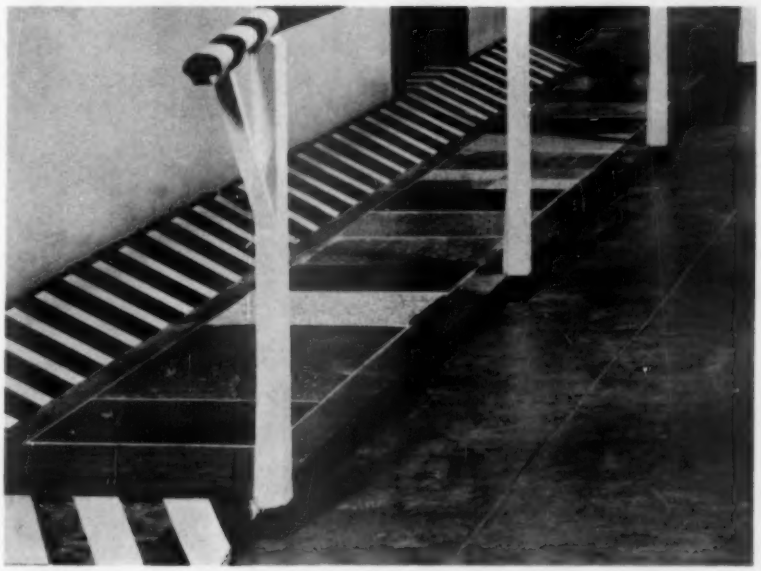
1. *Divide buildings into areas.* List type of service in each.

Typical areas are: aisles, storage areas, heavy machine areas, loading docks, assembly areas, corridors, offices, rest rooms, lunchrooms and laboratories.

2. *Check service requirements.* Following is a list of some things to consider in determining the floor structure and surfacing:

Traffic. What is type and volume? Is it chiefly pedestrian or vehicle? Is resistance to slipping vital? What aisle widths and clearances will be needed?

Loads. What type of load—standing, impact, rolling, sliding, or vibrating? What will be maximum weight and concentration?



Setup for testing various types of flooring materials.

Water. Will floor be subjected to standing water, humidity, condensation, hot water, or steam?

Temperature. Will there be exposure to excessive heat or cold?

Weather. Is there exposure to strong sunlight, freezing temperatures, snow, ice or rain?

Fire and explosion hazards. Are there flammable dusts or vapors? Is an electrically-conductive, non-sparking floor indicated?

Chemicals. Will there be spills of solvents, acids, alkalis, or grease?

Product cleanliness. Do food processing or precision operations demand floors that can be sanitized?

Appearance. Is it a primary consideration?

Maintenance. Will the area demand vigorous cleaning?

Flooring Materials

There is no perfect material—one which will stand up under all exposures, be slip-resistant under all conditions, easy to maintain, also moderate in cost. Usually there must be a compromise.

Concrete comes the closest to being an all-purpose material. It is used for more than 75 per cent of industrial flooring. Concrete is generally preferred for damp locations.

Where concrete floors have failed to give satisfactory service, the fault may be due to installation methods. Many maintenance problems can be avoided by proper curing, hardening and sealing. Continuous damp curing, particularly in the earlier stages of hardening, helps to secure a hard, dense surface and retards checking and dusting.

Hardening compounds and sealers help to prevent dusting, but no surface treatment can make perfect wearing surfaces of poorly built floors.

For repairing holes and cracks, some proprietary compounds are superior to concrete. However, the patch should be thick enough to stand up under heavy traffic. A feather edge is not durable.

For painting, floor enamels prepared especially for concrete are more durable than general purpose enamels. New concrete should be treated with zinc sulfate solution before painting to neutralize alkalinity.

Concrete provides a good sub-

stantial base for resilient flooring.

With all its merits, concrete is not resistant to some destructive agents including acids and alkalis. Where floors are usually damp or are cleaned by flushing, the surface should be graded and drains installed.

Resilient non-slip mats are an aid to comfort where employees must stand in one position for long periods. Those who move about while at work are less likely to complain about floors being cold or hard. Footwear also has a bearing on comfort.

Asphalt (hot mastic) is non-dusting, elastic, odorless, and easily repaired. Problems of application restrict its use indoors.

Asphalt is resistant to weather and moisture but is affected by oils, solvents, acids, and alkalis. It stands up well under traffic but ordinary grades soften at temperatures above 95 F.

Harder grades of asphalt remain firm up to 158 F. With siliceous aggregate, the mix is resistant to acid.

Asphalt emulsion (cold mix), sold under various trade names, is made into a mortar with sand and cement, and laid about ½-in. thick. It is used extensively for patching. On a substantial wood base it will carry moderate traffic; with a concrete base it will take heavy trucking. The surface is somewhat harder than the hot mastic type. Both types are affected by oils, solvents, and heat.

Mastic flooring of other types usually has a resin binder. The materials are generally resistant to oils, solvents, and alkalis, but the manufacturers should be consulted about the exposure. These materials are relatively high in price and are used principally for patching and for resurfacing limited areas.

Ceramic glazed tile is frequently used where oils, acids, or alkalis are present and in food product plants where floors must be washed frequently.

Asphalt tile is suitable for offices, stores, light manufacturing areas, and floors below ground level. Several grades are available: industrial, standard, greaseproof, conductive, and greaseproof-conductive. It is moisture resistant but susceptible to indentation. It should be laid over a rigid base.

Asphalt tile is lower in price than other resilient flooring materials. It is non-slippery in its normal state and can be kept in good condition with slip-resistant floor finishes. Solvent waxes cause deterioration.

Linoleum is quiet and comfortable underfoot. It is used in offices, laboratories, and workrooms where cleanliness and appearance are important. Heavy gauge linoleum will withstand loads up to 75 psi. without permanent marking. Since highly polished linoleum is extremely slippery, the choice of a finish is important.

Rubber is resilient and durable when not exposed to oils and solvents. It has high dielectric strength which is undesirable where static electricity is a problem. Conductive types of rubber flooring are suitable for such locations. Abrasive rubber flooring is useful for stair treads, elevator sills, and thresholds.

Vinyl plastic, usually in tile form, is durable, decorative and relatively high in price. It resists acids, alkalis, and most organic solvents. The surface is non-porous and easy to keep clean.



"Shall we try a nonskid wax next time?"

Wood block is widely used for heavy duty general purpose floors. It is durable, relatively quiet and comfortable under foot and does not become slippery. Blocks laid on a smooth, rigid base will stand up under heavy trucking and are not likely to crack. Blocks impregnated with creosote resist dampness

Blocks should be set in high-melting-point pitch. Ordinary pitch or tar filler may stick to wheels and shoes in hot weather.

Wood plank. Close-grained wood is comfortable and reasonably durable under foot traffic. Under moist conditions, boards may swell and buckle. A heavy subfloor makes surface flooring more resistant to moisture and traffic. Under heavy wheel traffic, boards may loosen or break frequently. A penetrating floor seal protects the surface and makes cleaning easier.

Fabric surfacing. Heavy fabric coated with mineral grains is used indoors and out for stair treads, ramps, and around machines. The material can be applied to concrete, metal, or wood. It is backed with adhesive to the surface under pressure. It wears well and resists water, oil, and weather.

Steel plates are serviceable for platforms, stair treads, floors and hatchways. They wear well and are easily cleaned but are noisy and highly conductive of heat.

Extruded patterns offer good traction and resistance to slipping. When worn, plates can be roughened with a welding torch.

Steel plates are also used over ducts which carry electric circuits or pipe lines. They are easily assembled and can be removed for servicing equipment.

Grating is particularly useful around boiler rooms, over openings, for platforms and stair treads. It does not collect dirt, liquids or snow and permits circulation of air.

Magnesite is suitable for light traffic. It must be laid on a rigid base. It should not be used where there is excessive moisture or hydrostatic pressure, as in basements. It is resistant to oil. A coat of bituminous paint should protect metal surfaces in contact with magnesite since it corrodes some metals.

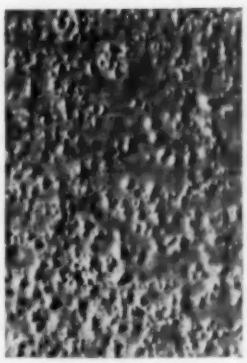
Terrazzo is durable and easily maintained. Abrasive aggregates in the mixture provide a non-slip surface. Sealers make it impervious to most acids. Where there is excessive foot traffic, as in building lobbies, rubber mats reduce slipping hazards and protect the surface.

Lead is used for floors exposed to acids and as insets or mats for secure footing in operation of woodworking machines or other places where the results of a slip and fall would be unusually serious. Lead is conductive of heat, non-sparking, and quiet.

Zinc is non-sparking and sometimes used in such locations as compounding rooms where fire and explosion hazards exist. Zinc is not resistant to acids and alkali.



Philadelphia Electric Company workers get sure footing despite oil film with A.W. ALGRIP



Hot, heavy oil occasionally spills on this walkway at the Schuylkill Station of the Philadelphia Electric Company, but A. W. ALGRIP help prevent accidents by providing assured footing.

A. W. ALGRIP rolled steel floor plate is produced by Alan Wood Steel Company by a patented process in which an abrasive—just like the kind used in grinding wheels—is embedded to a controlled depth. It becomes an integral part of a tough steel plate.

A. W. ALGRIP can be used as independent flooring . . . or as flooring overlay, on level or inclined surfaces. Put your plant on a safe footing, with A. W. ALGRIP . . . approved for Safety by Underwriters' Laboratories. Write for Bulletin AL-S1.

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CIRCLE 2 ON READER CARD

Lighting Is No Luxury

Efficiency, safety depend on an effective system



This shop-fabricated guard keeps broken light bulbs from falling on workers or into product below.

UNIFORM, dependable, artificial lighting or the lack of it—can make or break the efficiency and safety of any industrial interior.

What is good lighting? If the eye is to function effectively, the installation must:

1. Provide adequate light at the work surface. The worker must see easily and accurately.
2. Minimize contrast, glare and shadows.
3. Supply light of suitable quality for quick and accurate judging of details.
4. Contribute to a pleasing working environment.

If the surrounding area has a brightness at least one-third that of the task, visual conditions are reasonably good.

Glare can be reduced by higher illumination levels throughout the rooms, also by finishing ceilings, walls, floors, and machines in light colors which reflect a high percentage of light. This reduces contrast between adjoining surfaces.

Directional and shadow effects are often desirable in general lighting. They accentuate the depth and form of solid objects. Clearly defined shadows are helpful in some operations, such as textile inspection. Avoid harsh contrasts.

Light levels for every type of operation will be found in many reference books. The most comprehensive work is the *IES Lighting Handbook*. Much useful information will also be found in manuals published by manufacturers of lighting equipment.

Existing levels are determined from readings with a light meter at points where light is needed. This device gives a direct reading in footcandles.

General lighting is the minimum amount of light required for an area. This has been defined as uniform distribution of light to produce approximately equivalent seeing conditions throughout an interior.

Localized general lighting sources are usually arranged 10 ft. or more above the work. They should prevent excessive contrast in brightness between the more highly lighted work area and the adjacent areas, and provide sufficient light for ordinary visual needs.

For general overhead lighting, levels range from 5 fc. for inactive storage and passageways to 1000 fc. for more exacting work, such as extra fine assembly.

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Levels of 200 fc. or more are obtained with a combination of general lighting plus specialized supplementary and/or large luminous area lighting.

Extra footcandles. To insure continued adequate levels, the system should be designed to give initially at least 25 per cent more light than the recommended minimum.

Where dirt collects rapidly and maintenance is difficult, the initial value should be 50 per cent above the minimum.

Supplementary lighting. Difficult seeing tasks require more light than can be obtained economically by overhead general lighting. For such work use supplementary fixtures.

Two types of equipment meet most needs. One uses small concentrating projectors to increase the light on the work and provide directional quality.

Another type has large area with low brightness, such as fluorescent desk or bench lamps. These fixtures can provide either general lighting for a small area on extra light for critical work, such as inspection.

Supplementary lamps should be shielded, louvered, or mounted to prevent glare.

Electric Light Sources

Three major light sources are fluorescent, mercury vapor, and incandescent. They frequently are combined to meet special lighting situations.

Fluorescent lighting is used for general lighting in 90 per cent of industrial applications at low and medium heights, also for high-bay mounting over large areas.

Mercury vapor lighting is largely used for medium to high-bay lighting in comparatively narrow room areas.

Incandescent lighting, with appropriate fixtures, may be used at any mounting height.

Fluorescent and incandescent lamps are used for supplementary bench and machine lighting.

Comparative efficiency. The fluorescent lamp, generally speaking, provides more than 3 times the light per watt of an incandescent lamp. It lasts approximately 7 times as long.

The mercury vapor lamp produces more than 2½ times the light

per watt of an incandescent bulb and lasts more than 5 times as long.

An incandescent lamp can be used with any standard socket. Fluorescent and mercury vapor lamps need auxiliary ballast.

Fluorescent lamps excel in both efficiency and quality of light. The long, luminous tubes diffuse light over a wider area, make for more comfortable seeing and reduce glare and shadows to a minimum.

The fluorescent lamp produces three times the visibile light but only half the radiant heat of the incandescent lamp. This cooler light helps reduce the cost of air conditioning.

Mercury vapor gives a high vollume of concentrated light per fixture. This makes it ideal for high-bay installation.

Long life is an important feature —averaging more than a year on typical two-shift operation. Mercury vapor provides a compact, controllable light source which performs well in all temperatures. It is simple to maintain and has many uses.

The blue-white hue is adequate for the black, gray, and white seeing tasks of many industrial operations.

The basic color of the light can be modified by using color-improved mercury lamps or by combining with fluorescent or incandescent lighting.

The mercury-fluorescent combination is effective in medium-high bays which are easy to service and free from excessive dirt. Mercury should supply 60 to 80 per cent of the total light. Fluorescent will soften glaring contrasts.

In high bays twin units for mercury and incandescent can be installed. The mercury provides 50 to 65 per cent of the light. This combination is simple to maintain, offers little surface for dirt accumulation. It provides instant relighting after power interruption, when mercury lamps take 5-8 minutes to relight.

Incandescent lamps are low in initial cost. No auxiliary equipment is needed and an incandescent system is easy to install, maintain and relamp. However, lower efficiency makes over-all lighting cost higher.

Incandescent provides a "point" source of light. It can be controlled more easily but is more likely to

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48 inch width up to 60 ft. lgth.
Write for complete details —nearest distributor
CROSS-RIB RUNNER
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Exclusive! Wear-Proof mats feature patented "V" rib design. Dirt is scraped off shoes by heavy duty blades with "windshield wiper" action — Dirt falls into slots, easily cleaned out later.
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CIRCLE 4 ON READER CARD

produce glare and shadows. In industrial practice, incandescent is used largely for supplementary lighting with fluorescent fixtures supplying most of the general lighting.

Efficient operation requires frequent checking to prevent voltage variation. If circuit voltage is lower than rated lamp voltage, light output and watts decrease, though life lengths. If voltage is higher, light output and watts increase but life is shortened.

Voltage variation should be held within 3 volts of rated lamp voltage for 110-125-v. lamps and within 6 volts for 220-250-v. lamps.

Reflectors. Many types of reflectors have been designed to conserve light and prevent glare. Consider:

1. Distribution of light on the job.
2. Efficiency of light output.
3. Sturdiness of construction.
4. Adaptability if more light is needed.
5. Economy of cleaning and replacement.

Lamps with a reflecting surface inside the bulb are used where dust, fumes, and other conditions make maintenance difficult or costly. The reflecting surface is sealed against deterioration and light is diffused through the bottom of the lamp.

Reflectorized lamps are available in both filament and mercury vapor types.

Natural Light

A plant may be designed to make full use of daylight or to depend largely or wholly on artificial light. The problem is primarily one of economics, figuring the number of sunny days, and on the increased cost of construction to bring daylight into the plant.

Sawtooth roofs, oriented to avoid direct sunlight, offer an effective way of daylighting a one-story building. Extra construction cost, as compared with a flat roof, may amount to 20 per cent or more.

Side windows alone are unsatisfactory for lighting extensive areas.

Skylights are rather expensive to keep in repair and clean. In regions where hail storms are frequent, panes of acrylic plastic are more serviceable. These are made to transmit a maximum of diffused light and a minimum of heat.

Refracting and *diffusing* glass are helpful in subduing glare. They improve distribution of light, particularly to distant parts of the room.

Translucent coating for windows also helps to reduce glare.

Reflection of daylight from sources outside a building can often be utilized. Light colors for faces of structures, walls of courts, and sawtooth roofs are helpful. These surfaces should be kept clean and free from sources of glare.

Sudden transition from bright to dim areas in a plant is hazardous. Gradations of light at the approaches to areas of different intensity will avoid this trouble.

Photoelectric cells can maintain an even level of light, turning on artificial lighting when illumination falls below specified level.

Special Fixtures

Where lighting equipment is required for special uses or subjected to abnormal conditions, many types of lamps and fixtures are available.

Glow lamps are used as signal, pilot and night lights. They are not practical for general illumination.

Shock-resisting lamps are constructed to withstand shocks and bumps. They are used chiefly with portable fixtures on extension cords. Where possible, the use of low voltage (6-12 v.) can often improve lamp performance.

Vibration lamps have a more flexible tungsten filament and special support. Since vibration and shock frequently occur together, testing both shock and vibration resistant lamps will tell which gives longer service. Fluorescent and mercury vapor lamps are a good choice where shock or vibration is present.

Weather-resistant lamps are used for outdoor lighting in industrial plants, docks, arenas, etc. They stand exposure to rain, sleet and snow without cracking.

Explosion-resistant fixtures are used where dusts, gases, fumes and vapors may create a hazardous atmosphere. These are available for use with incandescent and mercury vapor lamps. For the latter, ballasts should be located outside the hazardous areas.

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CIRCLE 5 ON READER CARD

Getting Up There

Is a matter of space, grade and traffic

STAIRS, RAMPS or fixed ladders – installed as permanent access structures – are a major key to consistently safe industrial operations that require work on more than one level. Local conditions, space available, and the nature of traffic determine the choice of access.

Stairs are used for grades between 20 and 50 degrees from level.

Ramps are used where space permits and where there is considerable wheeled traffic. They should slope as little as possible; 15 degrees should be the maximum.

Fixed ladders are for grades over 50 degrees. They should be installed only where there is not enough space for stairs or ramps.

Stairs

Avoid long stair flights. Landings every tenth or twelfth tread are recommended.

For grades between 7 and 20 degrees, a combination of stairs and level landings may be used.

Spiral or winding stairways should not be installed except on circular structures 16 or more feet in diameter.

Angle of stairs. Ratio between depth of stair treads and height of risers determines the angle or pitch of the stairs. The preferred angle of stairs is between 30 and 35 degrees from the horizontal.

Treads must be wide enough so that in descending the stairs, the ball of the foot does not project beyond the nosing and the heel does not strike against the riser above.

Building Exits Code, A9.1, specifies that treads of new stairs shall not be less than 9½ in. exclusive of nosing; also that no tread of less than 6 in., exclusive of nosing, shall be permitted.

Risers should not be more than 8 in. nor less than 5 in. in height. Greater or less height will cause an unnatural stride and a serious fall.

Railings and handrails. ASA Code *Floor and Wall Openings, Railings and Toe Boards, A-12,* requires that every flight of stairs having 4 or more risers shall be equipped with standard stair railings or standard handrail as specified.

Ramps

Ramps facilitate wheeled traffic between levels. For foot traffic they are preferable to stairways when practicable. They should be built to the least slope possible. Maximum recommended slope is 15 degrees.

For wood ramps, materials used in construction should meet the requirements for scaffolds. Width should be adequate for traffic and open sides should be protected with standard railings 42 in. high.

Toe boards should be installed where the ramp extends over a work place or passageway. Cleats 16 in. apart are needed on steep inclines.

Concrete that has worn smooth can be roughened by scrubbing with dilute nitric or muriatic acid. The surface is then hosed to remove all traces of acid.

Ramps used by heavy vehicles, such as power trucks and heavy-duty hand trucks, should have solid curbs as well as handrails.

Snow removal. Outdoor ramps and platforms should be kept clear of snow and ice in winter. If ice cannot be removed immediately sand or cinders may be applied to give traction. In cold climates radiant heating installed in the concrete is often a good investment.

Fixed Ladders

Fixed ladders should have parallel sides of wood or metal, and should be permanently fastened at top, bottom, and intermediate locations. If 20 ft. or longer, the ladder should be provided with cage or basket guard.

Fixed ladders over 30 ft. long should be built in zigzag sections, unless cages are used, and should be provided with platforms at intervals of not more than 20 ft.

Side rails should be carried 3½ ft. higher and preferably goose-necked. Openings more than 18 in. between the ladder and the working platform should be protected by a landing platform.

CIRCLE 6 ON READER CARD



GETS-A-LITE GUARD and GUIDE

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- Simply slip GETS-A-LITE GUARD AND GUIDE over the fixture, as illustrated.
- Made of indestructible spring steel wire. Nothing to break, get out of order or replace. Will last indefinitely.
- Once installed, GETS-A-LITE GUARD AND GUIDE is NEVER removed.
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- Available for 40 watt and 100 watt fluorescent lamps.

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• Reduce traffic accidents at blind corners inside and outside your plant —also at loading platforms.

Traffic Safety Mirrors are available in Convex or Flat glass. All have a Yellow and Black Safety Stripe Border.

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CIRCLE 7 ON READER CARD



Moving? Modernizing?

One or the other is advisable to keep competitive

AMPLE WORK and storage space, good ventilation and lighting, efficient handling of materials, and provision for employee services — these are the modern standards that usually guarantee efficient operation and safety for workers in an industrial plant. Is your plant up-to-date? If not, modernize or move!

Selecting the site. First step is to check with local authorities on zoning regulations. A plant producing or using highly flammable, explosive, or toxic substances or creating smoke, fumes, odors or excessive noise demands isolation in the interest of good public relations and will probably be barred from populated areas by local ordinances.

Minimum distances between buildings of various types, sizes and occupancies are specified in fire protection codes. For flammable and explosive materials, minimum distances between storage areas and other property are specified.

Traffic access streets or highways, and parking space are often deciding factors in selecting the site for a plant, a commercial building, or a service institution. Mass transportation systems are not always convenient and a large proportion of employees may use private cars.

Topography. A location where floods due to heavy rains and inadequate drainage or adjacent streams are a recurring threat is an undesirable industrial site. Where a facility is established in such an area, emergency plans for protecting life and property should be pre-arranged.

Climate. In colder regions, removal of ice and snow is a seasonal problem. Buildings must be constructed to withstand maximum accumulated roof loads. Fire protection also requires special attention.

Industrial Buildings

Movement of industry to outlying areas, where land values are lower, has encouraged construction of one-story plants. In addition to somewhat lower costs, advantages of single-story construction include:

1. Concentration of operations under one roof.
2. No stairs or elevators.
3. Ease in routing and handling heavy and bulky equipment.
4. Better lighting and ventilation.
5. Easier isolation of hazardous operations.
6. Efficient handling of material in process.
7. Ease of supervision.
8. Lower operating and maintenance costs.
9. Possibilities of pleasing architecture and landscaping.

Multi-story construction is favored where flow of materials in process is aided by gravity. In regions where floods may occur, it permits removal of valuable equipment to upper floors.

Light and air. Modern lighting and air conditioning make man independent of nature for light and climate. Controlled conditions may be obtained in a windowless design. Windowless buildings, however, may complicate fire protection problems.

Roofs. Flat roofs or those with few projections are comparatively low in cost. Monitor and sawtooth roofs admit light and air to the center of buildings but add to construction and maintenance costs. Artificial light sources which rival natural light make daylight less important.

Whether building a new plant or modernizing an old one, these factors apply. Most of the newer plants would receive a good rating on these standards, but many an older plant could be improved. However, the decision on modernization or moving and building elsewhere will be based on money matters.

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SECTION 2

HOUSEKEEPING AND MAINTENANCE

IN SECTION 2:

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Cleanliness Is Next to Safety-ness

By LESLIE J. QUINKER



Leslie J. Quinker is safety supervisor, Schenley Distillers. He is currently serving the National Safety Council as first vice chairman of the Food and Beverage Section. A graduate of St. Mary's University, Baltimore, Mr. Quinker did graduate work in the social sciences before joining Schenley in 1944. He is a member of the Louisville, Ky., Safety Council; American Society of Safety Engineers; Distillery Safety Directors Group; Committee on Education, President's Conference on Industrial Safety; American Red Cross; and the Kentucky Governor's Conference on Highway Safety.

A PERENNIAL FRUSTRATION of today's safety engineer is housekeeping. Nothing causes him to reach for the tranquilizers quicker than the accident report which lists "Cause: Poor Housekeeping." Psychologically, I believe, the term "housekeeping" militates against the goal. It smacks of drudgery, monotony, women's work. So we have a motivating problem.

The corollary of safety to production is matched by that of cleanliness to safety. As the song says, you can't have one without the other. And today's emphasis on good housekeeping and maintenance is justified, if justification it needs, by the monetary savings easily verified.

Modern equipment and products to handle every type of cleaning or maintenance problem are available in a wide variety of sizes, shapes, colors and odors. The problem is not the scarcity of this equipment and products but their use. Advanced and advancing managements have long been aware of the balance between a well-kept plant and a safe one, cognizant of the fact that neither is either without the other. And this is good.

What is not so good is the inherent reluctance, in too many instances, of supervisors and employees in helping in the never-ending, day-to-day, boring job of keeping the plant clean. Top management, to use an old cliché, must be aware of its responsibility for cleanliness and plant maintenance. For the most part, I believe this awareness is a matter of course. Demanding these principles be carried out is not, I fear.

Even where housekeeping and maintenance programs are adequate —on paper—to eliminate accident causes, I believe foremen and supervisors are hampered by an acceptable motivating force or an inability to grasp and apply motivating principles to problems of plant cleanliness.

Appeals to basic motives of acceptance, recognition, challenge, security and comfort fall on usually deaf ears when voiced.

If the responsibility for plant sanitation is assigned to one individual with a competent crew designated to clean, wipe, wash, disinfect and polish, we can reasonably expect accidents arising from poor housekeeping to remain at an irreducible minimum.

Where the plant's cleanliness is a matter of departmental jurisdiction, results are going to be only as good as those demanded by the department head in charge.

Until the relationship between cleanliness and safety is thoroughly understood by *all* of the working force, and until we find a more meaningful phrase than "Keep It Clean," we can expect from cause to effect a fairly constant swath of accidents which have their beginnings in poor housekeeping.



MANPOWER is expensive. Floor machines conserve it. This self-propelled model applies cleaner, scrubs, rinses, and damp-dries in one operation. (Finnell System.)

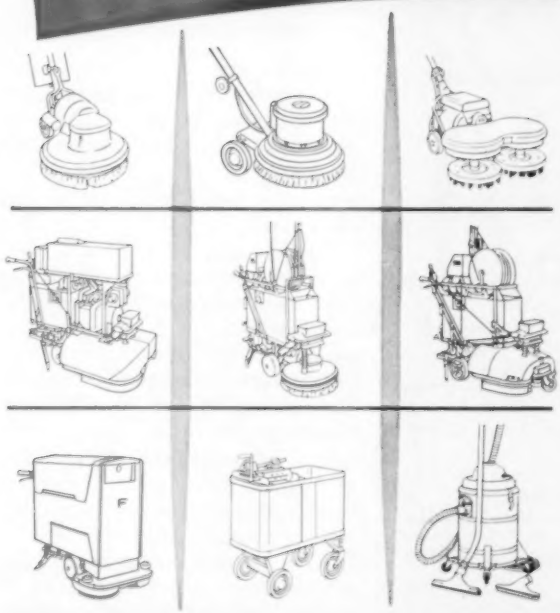
Keep your floor-maintenance men happy . . .



with Job-Fitted EQUIPMENT!

Choose from the COMPLETE Finnell Line

More than a score of models and sizes permits selection of the equipment that's exactly right for your job!



However much a maintenance man may want to do a good job, and at the same time show savings in labor costs, he's *stymied* if the machine is too small, or too large, or is otherwise unsuited to the job. Different floors and areas call for different care and equipment. That's why *Finnell makes more than a score of floor-maintenance machines.* From this complete line, it is possible to choose equipment that is correct in size as well as model . . . that provides the maximum brush coverage consistent with the area and arrangement of the floors.

Finnell offers *Conventional Polishing-Scrubbing Machines* in both concentrated and divided-weight types . . . a *Dry-Scrubber,* with self-sharpening brushes, for cleaning grease-caked floors . . . *Combination Scrubber-Vac Machines* for small, vast, and intermediate operations, including self-powered (gasoline, propane, and battery) as well as electric models . . . *Mop Trucks* . . . a full line of *Wet and Dry Vacuum Cleaners, Attachments,* and *Accessories.* In addition, *Finnell* offers *Cleansers, Sealers,* and *Waxes* of every requisite type, and also a *Waxless Finish* . . . *Steel-Wool Pads* and other accessories — *everything for floor care!*

In keeping with the *Finnell* policy of rendering an individualized service, *Finnell maintains a nation-wide staff of floor specialists and engineers. There's a Finnell man near you* to help solve your particular floor-maintenance problems . . . to train your operators in the proper use of *Finnell Job-Fitted Equipment and Supplies* . . . and to make periodic check-ups. For consultation, demonstration, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 2200 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

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CIRCLE 16 ON READER CARD



Skid-resistant "shoes" help stabilize ladders where ground or floor is slippery.

Be Kind to Ladders

And they'll be kind to you

STANDARDIZING the use and maintenance of portable ladders is complicated, since they serve widely different needs and are handled only occasionally and in scattered locations.

Analysis of accidents indicates few mishaps result from faulty material or construction. More often, the ladder has suffered abuse, maintenance has been neglected, or the user hasn't observed safe practices.

Even with sound equipment, an accident may occur when the ladder is not placed at the correct angle with the wall or is not planted securely on the ground or floor. Physical defects of the user are also responsible for many falls.

Standards. The buyer of wood ladders has two reliable guides. One is the label indicating the product has been built according to the strict specifications of the American Standard *Safety Code for Portable Wood Ladders, A14.1-1959.*

The other is the label of Underwriters' Laboratories indicating the ladder has passed the Laboratories' rigorous tests.

Metal ladders are covered by American Standard *A14.2-1956.* Standards for aluminum and magnesium ladders had previously been established by the Metal Ladder Manufacturers' Association.

Definitions

1. *Stepladder.* A self-supporting portable ladder, non-adjustable in length, having flat steps and a hinged back. Size is designated by over-all length of ladder measured along front edge of side rails.

2. *Single ladder.* A non-self-supporting portable ladder, non-adjustable in length, consisting of but one section. Size is designated by over-all length of side rail.

3. *Extension ladder.* A non-self-supporting portable ladder adjustable in length. It consists of two or more sections traveling in guides or brackets so arranged as to permit length adjustment. Size is designated by sum of lengths of sections measured along side rails.

4. *Sectional ladder.* A non-self-supporting portable ladder, non-adjustable in length, consisting of two or more sections so constructed that the sections may be combined to function on a single ladder. Size is designated by over-all length of assembled sections.

5. *Trestle ladder.* A self-supporting portable ladder, non-adjustable in length, consisting of two sections hinged at the top to form equal angles with the base. Size is designated by length of side rails measured along front edge.

6. *Extension trestle ladder.* A self-supporting portable ladder, adjustable in length, consisting of a trestle ladder base and a vertically adjustable single ladder, with suitable means for locking the ladders together. Size is designated by length of trestle ladder base.

7. *Special-purpose ladder.* A portable ladder which represents either a modification or a combination of design or construction features in one of the general purpose types of ladders previously defined to adapt the ladder to special or specific uses.

8. *Trolley ladder.* A semi-fixed ladder non-adjustable in length, supported by attachments to an overhead track, the plane of the ladder being at right angles to the plane of motion.

9. *Side-rolling ladder.* A semi-fixed ladder, non-adjustable in length, supported by attachments to a guide rail, which is generally fastened to shelving, the plane of the ladder being also in its plane of motion.

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Materials and Construction

Wood, which meets the requirements of weight and strength at moderate cost, is the most widely used material. Acceptable kinds and grades of wood are listed in the ASA Code.

Ladders may have either spreading or parallel side rails. They may have sides flaring at the base to increase stability, and converging at the top for specific uses.

Laminated ladders. Side rails of laminated wood have high strength-weight ratio.

Laminated ladders are available in single and two-section extension ladders and several specialized types.

Light metals. Aluminum and magnesium alloys are light in weight and resistant to moisture. In case of overload there is sometimes deflection warning instead of sudden breakage. Buckling of metal ladders, however, can be as rapid and dangerous as breakage of wooden ladders. Prices

are higher than for wooden ladders.

Metal ladders should be free from sharp edges and burrs on the side rails. Soft metal rivets that might shear off under load should not be used.

Single or extension ladders, stepladders, platform ladders, and planks, stages and hangers are available in light metals.

Glass fiber and plastic. Single and extension lightweight ladders are now available in a sandwich construction of glass fiber and polyester resin. Advantages claimed are high strength-to-weight ratio, non-conducting qualities and resistance to corrosion. The mechanical properties of fiberglass vary. A common type has a modulus of elasticity 1½ times that of wood, but four times the density. These characteristics make ladder design more difficult. Glass fiber reinforced side rails are plastic welded with aluminum or magnesium rungs to form an integral part of the ladder.

Standard single ladders, 8-16 ft., and extension ladders, 16-28 ft., weigh approximately 2 lbs. per ft. Heavy-duty single ladders, 8-20 ft., weigh 2¼ lbs. per ft. and extension ladders 2½ lbs.

These ladders are not currently covered by ASA codes.

Types of Ladders

Stepladders are available in lengths up to 20 ft. Three types are listed by the Code:

1. Heavy duty—4 to 20 ft.
2. Medium duty—4 to 12 ft.
3. Light duty—3 to 8 ft.

The front section should have level treads when in the open position.

The rung-back stepladder permits a helper to assist from the back of the ladder.

A spreader or locking device of sufficient size and strength to hold front and back sections securely in the open position is important.

A bucket shelf is useful for many jobs. It should support a load of 25 lbs. and be fastened so it can be folded up when the ladder is closed.

Platform (safety) ladders are a development of the stepladder. They provide a solid working platform

— To page 56



for floor safety throughout your plant

the one best answer is...

Sure-Foot
NON-SLIP ABRASIVE PAINT

Accidents cost money . . . floor safety is cheap with Sure-Foot! Believe it or not, Sure-Foot protection for your floors costs less than 10¢ a square foot for 2 coats—including application.



Sure-Foot is easy to apply with ordinary painting tools. It dries quickly to a non-skid surface made up of millions of tiny carbide crystals—tough, abrasive and long lasting. Sure-Foot adheres firmly to wood, concrete or metal. Can be used on manufactured products, plant equipment and machinery as well as all foot traffic safety areas throughout your plant and premises. Sure-Foot is ideally suited for plant zoning because it's *super tough*. Lasts 3 to 4 times longer than ordinary zoning paints! Available in gray, red, black, green and traffic yellow.

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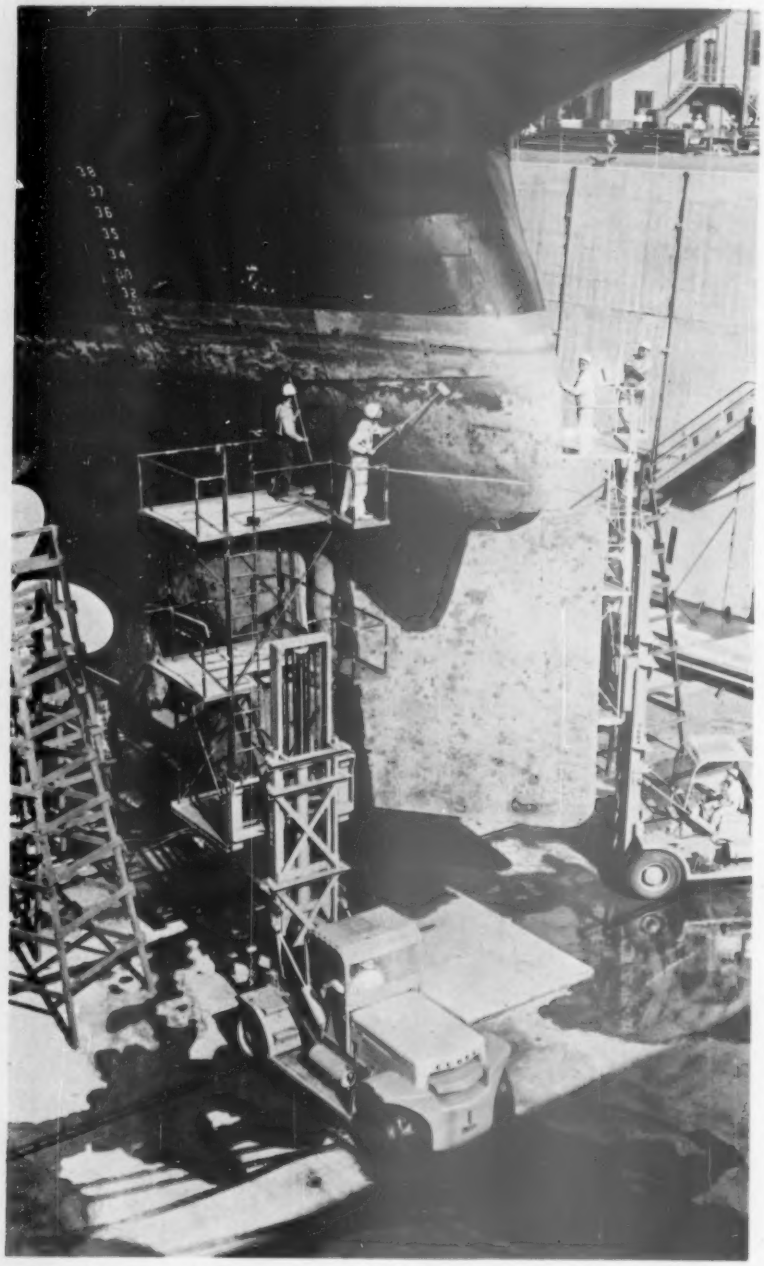
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CIRCLE 23 ON READER CARD

Scaffolding Hits High Spots

From maintenance to construction



Supported by fork trucks, these mobile scaffolds enable repair crews at a dry dock in Newport News, Va., to reach up 41 ft. and paint the underside portion of this ship's stern.

A VARIETY of scaffolding finds use on high jobs. Applications range from light, movable platforms for maintenance and repair work to sectional steel scaffolds used on large building projects.

(Wood scaffolding erected on the job by contractors is not treated in this article. Construction details will be found in NSC's *Accident Prevention Manual for Industrial Operations* and in construction manuals.)

Of principal importance in the safe use of scaffolding is knowledge of the type best suited to a given task.

Types of scaffolds. Three principal classifications of metal scaffolds are:

1. Built-up scaffolds, as the name implies, are built up from the ground or floor as the work progresses. They can be made up from sectional frames or from tubes and couplers.
2. Hanging scaffolds. This type comprises two classifications: heavy-duty suspended equipment and light-duty swinging scaffolds.
3. Rolling scaffolds. Easily movable units can be made up by fitting casters to either of the two types of built-up scaffolding, or to special aluminum components.

Tube and coupler scaffolds are used on large jobs where work is carried on at great heights. Scaffolds may be purchased or rented. When rented, erection and dismantling by experienced crews are included in the contract.

Steel scaffolds, except for wood planks, are noncombustible. They offer less resistance to wind than all-wood scaffolds. Interchangeable parts make the scaffolding adaptable to a variety of jobs and facilitate erection and dismantling.

Rolling scaffolds. In addition to those assembled from sectional steel scaffolding or tube-and-coupler components and fitted with casters, there are three other types:

1. Sectional ladder scaffolds of steel or aluminum.



Seeking a floor absorbent that's safe and economical?

TRY ZORB-ALL®!

The only thing ZORB-ALL has in common with ordinary floor absorbents is price! You'll pay no more for it . . . you'll use a lot less of it . . . and you'll get far greater safety with it. Its rugged, angular particles have twice the resistance to breakdown, provide better protection twice as long with half the work. Use it inside to absorb grease and oil . . . outside to skidproof icy surfaces. Get in touch with your Wyandotte representative. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California, and Atlanta, Georgia. Offices in principal cities.*

Wyandotte® Chemicals

J. B. FORD DIVISION

CIRCLE 9 ON READER CARD

2. Sectional aluminum scaffolds with interior or exterior stairway.
3. Scaffolds made of folding one-piece sections.

Sectional rolling scaffolds should not be erected higher than permitted by governing codes, which usually require that the shortest base dimension be one-fourth of the platform height. Base dimensions can be increased by outriggers.

Telescoping portable towers are used for some maintenance work.

Caster locks should be provided on movable equipment to prevent movement while in use.

Swinging scaffolds are light-duty equipment primarily for men and hand tools. They are used for painting, tuck-pointing, glazing, and other operations where scaffold height is adjusted frequently as work progresses.

A swinging scaffold should be hung securely from eaves, cornices, or other reliable support with strong hooks. Anchorage should be inspected before hooks are placed.

Ropes should be of best grade manila, not less than ¾ in., on at least 6-in. blocks.

Steel cable should be not less than 5/16 in. Steel cable is wound on a drum, not pulled by hand.

Safety belts attached to life lines extending from the roof to the ground should be worn by workers on swinging scaffolds. The safety belt rope should be tied to the life line with a triple sliding hitch.

Suspended scaffolds (heavy duty) are supported by outrigger I-beams attached to the frame of the building. They are recommended for use on buildings more than 5 stories high which have a frame to provide the overhead support. The scaffold is raised and lowered by steel cable operated by a winch.

Shackles or beam clamps holding cables should be securely fastened to outriggers with a stop bolt in the outer end of each outrigger. Cables should be securely fastened to outriggers and to the putlogs which carry the platform, or to the hoisting machines.

Ladder-jack scaffolds are used chiefly by painters and electricians. They should not be used more than 22 ft. above ground or floor or on extension ladders. An unsupported span should not be more than 10 ft. *One* person should work here.

Railings and toeboards. Most codes require railings on scaffolds more than 12 ft. high, but railings are desirable on lower scaffolds. A top rail should be 36-42 in. above the floor with an intermediate rail halfway between the top rail and the walkway surface.

Toeboards are needed to prevent tools or materials from falling.

Overhead protection, consisting of planking heavy enough to stop any falling object, should be provided for scaffolds when men are working overhead. This protection should be not more than 9 ft. above the working platform.

Sidewalk bridges. Where construction or repair work is carried on over sidewalks, protection for pedestrian traffic is needed. Sidewalk bridges of adequate strength are provided by companies furnishing sectional steel scaffolding.



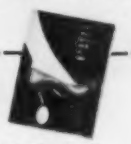
CIRCLE 161 ON READER CARD



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BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

CIRCLE 10 ON READER CARD

COLOR CARRIES IMPACT

Understanding color and its uses can boost production and cut injuries

A LONG STRIDE toward creation of safer and pleasanter work environments can be made through understanding the uses of color. With knowledge of its possibilities, management often uses color to:

- Conserve light–improve visibility
- Encourage better housekeeping
- Spotlight point of operation on machines
- Increase visibility of barricades and moving vehicles
- Identify fire and accident prevention equipment
- Add punch to instruction and warning signs
- Create cheerful surroundings–restful or stimulating
- Make rooms seem larger or smaller, warmer or cooler

Through the medium of paint, near miracles can be accomplished at moderate expense. But to get the desired results it must be applied according to established scientific principles. Paint manufacturers and color experts have conducted considerable research on functional and decorative use of color, and help is readily available.

Psychological factors. Certain colors have been found to produce definite mental and emotional responses. Familiar colors and the reactions they arouse are:

Yellow–cheering, stimulating.

Blue – gives a feeling of coolness; helpful where temperatures are uncomfortably high.

Green–restful to the eyes; blue-green is cool; yellow-green is warmer.

Red–danger, excitement; traditionally associated with fire.

Orange–bright and warm; use with caution.

Background Colors

The old plan of white for ceilings and upper walls with "practical" dark colors for dadoes and machines is being replaced by color schemes which provide more cheerful and attractive interiors. Paint companies and color consultants will be glad to furnish advice.

Sharp contrasts between bright and dark areas should be avoided. They require continual adjustment of the eyes in looking from one to the other, causing eyestrain and fatigue.

White is favorable for ceilings; it reflects more light–80-88per cent. But for rooms with low ceilings, or where people may look up at them, as in hospital rooms, cream, ivory,

the story —



of the foot that was still there!

Only because of the safety factor, which is an inherent feature of the MOTT mower design . . . was the boy's foot spared! In lawn mowing . . . "caution" and "warning" are not enough. SAFETY must be designed, engineered and built into the mower!

MOTT Hammer-Knife mowers are the safest . . . the most versatile mowers available! The lightweight free swinging knives, when rotated at proper operational speeds, have enough force to cut grass and tall weeds cleanly, but will retract when they strike solid objects. They act as a built-in shock absorber to minimize the force of the blow with little damage to the knives and the mower . . . and with very little tendency to throw the struck objects. MOTT Hammer-Knife mowers are available in a full range of sizes from 18" models to 19 ft. gangs.

Write for the "story of the shoe" . . . and see your MOTT dealer for a "Safety" mower demonstration!

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CIRCLE 11 ON READER CARD



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safely and conveniently holds tools, preventing falling accidents.

FOR THE SAFEST, MOST ECONOMICAL HIGHEST QUALITY, LONGEST-LASTING

Ladders and Scaffolds

FILL ALL YOUR NEEDS FROM ONE SOURCE . . .

Complete scaffolding and ladder equipment and engineering service offered through nation-wide sales offices or representatives. Look under Patent Scaffolding in the Yellow Pages for your nearest source.

"GOLD MEDAL"®
SAFETY PLATFORM STEP LADDER

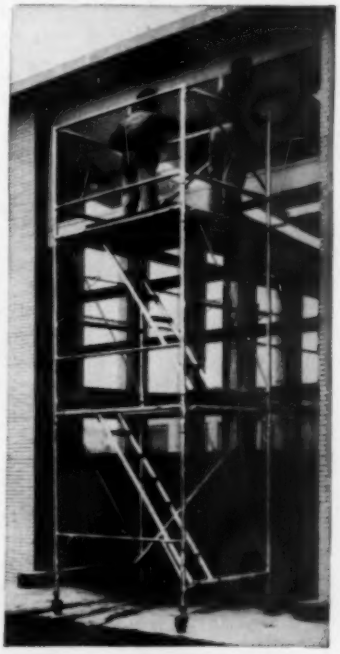
This is the safest step ladder made. If the "Gold Medal" Safety Platform Step Ladder does not cut the number of accidents in your building from falls, dropping tools, etc., then no ladder will. All pivot points are metal to metal, which reinforces all connections and eliminates chafing of wood. The broad working platform permits men to work in any direction—safely—with both hands free. Heavy rung back construction permits use by helpers. Yet, it handles with the ease of an ordinary step ladder, and requires no additional storage space. Bears the inspected ladder label of the Underwriters' Laboratories, Inc., and conforms to all details of A.S.A. and State Ladder Codes. Sizes: 3′ to 18′, height to platform. Equipped with "Gold Medal" Safety Spreader with each step truss-rodded and knee-braced.

PS CO. OFFERS A WIDE VARIETY of "Gold Medal" step, extension and single ladders for every purpose, with top quality in every price range.



SAFETY LADDERS

Made in 20″ and 30″ widths, from 1 to 5 steps without handrails (shown); 2 to 12 steps with handrails. Easy-to-roll, self-locking casters. Flared bottom design gives maximum stability. Steel angle reinforces all steps. Write for Bulletin SL-1.



ALUMINUM Rolling SCAFFOLDS

Designed for easy handling and maximum strength. Base dimensions of Sectional Scaffolds are 4′6″ by 6′. Ladder scaffolds can be 29″ or 4′6″ wide, 6′ 8′ or 10′ long. Both styles are U.L. approved. Write for Catalog A.

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CIRCLE 12 ON READER CARD

or sky blue is preferable to solid white.

For overhead networks of girders, pipes, and other equipment, colors of high reflectance also are desirable.

For sections of walls within the range of vision, soft tints, such as light gray, green, or blue, are suitable. Soft gray, for example, is restful and does not show dust readily.

A dado the height of work benches and machines—about one-third the height of the wall—makes soil and marks less conspicuous. It may be a deeper tone of the color of the upper wall but should not be too dark.

Floors should have a reflectance value of at least 25 per cent. For machines, benches, and desks, 25 to 40 per cent is suggested.

Point of Operation

To make it easier to see work and avoid injury, spotlight the point of operation with paint. Paint the body of the machine one color and working areas another.

Four standard shades of "machine gray" are available. Critical parts can stand out in cream, light tan, or other light contrasting color.

Light source and color. Type of light should be considered in planning the color scheme. Incandescent lamps reduce strength and intensity of color because the light has a slight yellowing effect.

Fluorescent lamps are offered in several types. The four most common are: standard warm white, standard cool white, de luxe warm type, and de luxe cool type. Cool white units give a bluish hue and can be used with blue, green, and blue-violet. Warm white is suitable for ivory, cream, beige, rose, and tan.

The de luxe lamps are used in plants where color discrimination is exacting, as for inspection, and in lounges, cafeterias, and display rooms.

Color for Identification

Safety codes for the use of standard colors for identification of equipment and hazards have been developed by the American Standards Association. *Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment Z53.1-1953* specifies uniform colors for marking physical hazards, for indicating the location of safety equipment and for identifying fire and other protective equipment.

Some chemical and petroleum companies have introduced minor variations from the ASA code, particularly where specific problems have been created by special products.

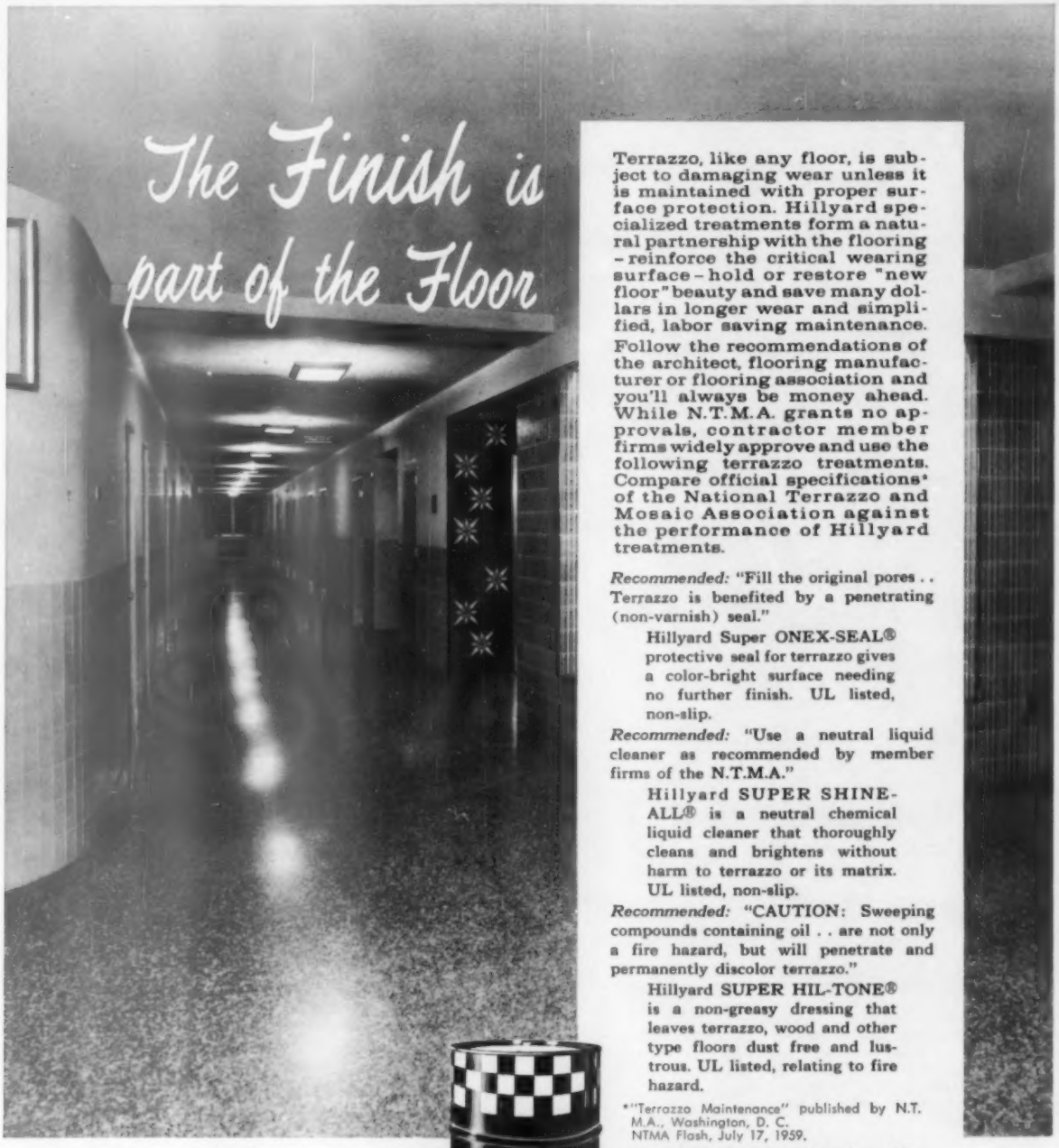
Red is for identification of fire-protection apparatus, and for walls or supports on which extinguishers are mounted; flammable liquid containers (except shipping containers) on which the name of the contents should be stenciled; lights at barricades and danger signs; emergency stops on machines such as rubber mills, wire blocks and flat work ironers, and emergency stop buttons for electrical switches.

Yellow has high visibility, suitable for marking hazards that may result in slipping, falling and bumping into objects. Stripes or checks of yellow and black may be used to attract special attention. Top and bottom treads of stairways, low beams and pipes, and crane hooks are places where yellow may be used.

Black and yellow stripes often



CIRCLE 13 ON READER CARD



Terrazzo, like any floor, is subject to damaging wear unless it is maintained with proper surface protection. Hillyard specialized treatments form a natural partnership with the flooring – reinforce the critical wearing surface – hold or restore "new floor" beauty and save many dollars in longer wear and simplified, labor saving maintenance.

Follow the recommendations of the architect, flooring manufacturer or flooring association and you'll always be money ahead. While N.T.M.A. grants no approvals, contractor member firms widely approve and use the following terrazzo treatments. Compare official specifications* of the National Terrazzo and Mosaic Association against the performance of Hillyard treatments.

Recommended: "Fill the original pores . . Terrazzo is benefited by a penetrating (non-varnish) seal."

Hillyard Super ONEX-SEAL® protective seal for terrazzo gives a color-bright surface needing no further finish. UL listed, non-slip.

Recommended: "Use a neutral liquid cleaner as recommended by member firms of the N.T.M.A."

Hillyard SUPER SHINE-ALL® is a neutral chemical liquid cleaner that thoroughly cleans and brightens without harm to terrazzo or its matrix. UL listed, non-slip.

Recommended: "CAUTION: Sweeping compounds containing oil . . are not only a fire hazard, but will penetrate and permanently discolor terrazzo."

Hillyard SUPER HIL-TONE® is a non-greasy dressing that leaves terrazzo, wood and other type floors dust free and lustrous. UL listed, relating to fire hazard.

*"Terrazzo Maintenance" published by N.T.M.A., Washington, D. C. NTMA Flash, July 17, 1959.

Let the Hillyard "Maintaineer®" serve on your team. Here's the man who can size up your floor problems, recommend treatments that meet manufacturer or association specifications. He's

"On Your Staff, Not Your Payroll"

Since 1907



ON TERRAZZO • WOOD • ASPHALT
RUBBER • VINYL • CONCRETE
OR GYMNASIUM—

You'll *Finish* Ahead with

HILLYARD

BRANCHES AND WAREHOUSES IN PRINCIPAL CITIES

San Jose, Calif. ST. JOSEPH, MISSOURI Passaic, N.J.

HILLYARD St. Joseph, Mo. Dept. I-2

☐ Please send treatment recommendations for terrazzo.

☐ Please have the Maintaineer call. No obligation!

Name.....

Firm or Institution.....

Address.....

City.....State.....

CIRCLE 14 ON READER CARD

are used on mobile equipment, such as tractors and industrial locomotives.

Green in combination with white, such as a green cross on a white background, designates location of first-aid and safety equipment. Location of stretchers, gas masks, and bulletin boards is identified by this color.

Black and white, in stripes or checks, are used for housekeeping and traffic marking.

Orange has high attention value. It is the basic color for marking dangerous parts of machines or energized equipment. It emphasizes such hazards when enclosure doors are open, or when gear, belt, or other guards around moving equipment are open or removed, exposing unguarded hazards.

Blue is for warnings, such as painted barriers or flags. These should be located conspicuously at the starting point or power source of machinery.

Purple is the official color for designating radiation hazards. Yellow should be used with purple for tags, labels, signs, and floor markers.

Five basic colors for identification of the contents of pipes are specified in ASA Code, *Scheme for Identification of Piping Systems, A13.1-1956*. Identification may be provided by stenciled legends, decalcomanias, self-adhesive tape, or painted stripes.

Color may be applied the entire length of the pipe or in bands 8-10 in. wide near valves and pumps, and at intervals along the line. The name of the specific material is stenciled in black conspicuously at valves, pumps, and similar places.

Color stripes painted at the edges of the color bands also may be used to identify the exact contents of lines, but this is less satisfactory than stenciled identifications. Labels which conform in color and size of letter to the code are on the market.

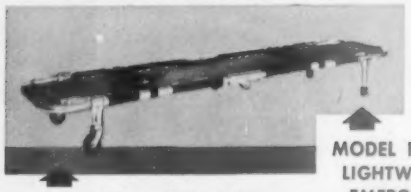
Paints, enamels, and lacquers provide a practical and flexible medium for the application of color. Industrial finishes often are subject to severe exposures; many types of paint have been developed for special needs.

ONLY 7½" HIGH—
Washington's LOWEST ELEVATING AMBULANCE COT!

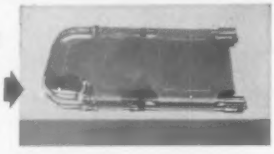


MODEL NO. 54-L
ELEVATING AMBULANCE COT
Here's the perfect answer to cars that have less headroom, and for over-head hanging stretchers. Although this cot folds to only 7½" high, it elevates to 34" hospital-bed height, **instantly** and **safely**! Famous Washington quality and craftsmanship make it today's finest cot. Reasonably priced at **$143.50.**





MODEL NO. 11
LIGHTWEIGHT
EMERGENCY
STRETCHER



Excellent for roadside pickups, removals and various types of patient transfers — a handy extra cot in a hurry! Legs and wheels unfold easily and snap into position, ready for instant use. Weighs only 14 lbs. Price **$44.50.**



Brings patients down stairs, through hallways and close quarters comfortably, where cots and stretchers cannot be used. Wheels make it easy to maneuver. Folds compactly, stows easily until needed. Complete with pad and two body straps. Price **$47.50.**



MODEL NO. 40
WHEEL MODEL
STAIR CHAIR

See your jobber or write for FREE catalog!

Washington Products Co.
WASHINGTON COURT HOUSE, OHIO

CIRCLE 15 ON READER CARD

Ladders

— *From page 47*

guarded on three sides — for safety.

Safety ladders are usually built for heavier duty than the ordinary stepladder.

Height to platform ranges from 3 to 18 ft., over-all height being 2 ft. more.

Pyramid safety ladders, made of aluminum or steel, provide a secure, well-balanced platform for work at heights up to 15 ft. Rubber-tipped feet hold the ladder in place while work is done and casters permit easy movement.

Single ladders up to the maximum length of 30 ft. specified by the Code are available. For sizes larger than 24 ft., extension ladders are easier to store and transport.

Sectional size of rails varies with the length of the ladder and diameter of rungs increases with the width of the ladder between side rails.

Diameter of rungs should not be less than 1⅛ in. Holes for rungs may extend through the side rails or be bored to give at least 13/16 in. of bearing to the rung tenon.

Oilers' ladders are provided with

CIRCLE 61 ON READER CARD →



Slippery flooring problem solved by St. Regis Paper Company's Bucksport, Maine, plant because M-S-A® Dura-Grip stays down, stays safe

"We haven't had a slip or fall report since we applied M-S-A Dura-Grip in August 1959."

That's the user experience of Howard C. Brooks, Safety Director of St. Regis Paper Company's Printing Paper Division.

Danger from water, often mixed with oil, is a slippery hazard in most paper mills. But St. Regis solved this surfacing problem by applying M-S-A Dura-Grip to 1,400 square feet of walkways.

Applications proved durable in spite of heavy employee and vehicular traffic, and the punishing side effects of frequent hosings with steam-detergents. *You can realize the same results in your plant.*

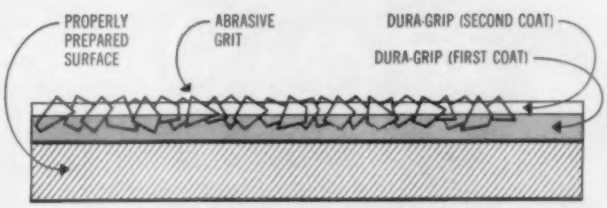
On properly prepared surfaces, this anti-slip compound will wear and wear. And it won't break down, flake off, chip, peel or disintegrate. No worry about premature resurfacing.

Use it on metal, concrete, wood or marble. Inside or outside. Any place foot traffic or wheel traffic could conceivably slip, slide, spin or skid.

Anyone can apply it. Cures fast. Neat and attractive, Dura-Grip is now available in four colors: Black, Gray, Yellow and Red.

For free bulletin, write MSA, or check with the MSA representative. *Sample of applied material on request!*

MINE SAFETY APPLIANCES COMPANY
Pittsburgh 8, Pennsylvania



This is the Dura-Grip sandwich. Edges, sides and corners of the tiny particles, impregnated in the resin bonding coat, protrude enough to form an absolutely slip-proof surface. Second locking coat permanentizes the grits.

hooks at the top so the ladder may be securely fastened to overhead shafting.

Extension ladders. Two-section extension ladders up to 60 ft. in length are recognized by the Code. Specifications for dimensions of side rails and type of wood permitted vary with the length of the ladder.

Minimum overlap for ladders up to 36 ft. is 3 ft.; from 37 to 48 ft., 4 ft; from 49 to 60 ft., 5 ft.

Smaller side rails on rung-type ladders are acceptable when reinforced by steel wire running the length of the side rails and securely fastened to them.

Locks must be positive in action. Guide irons must be securely attached to the ladder and so placed as to prevent the upper section from tipping or falling out while raising, lowering, or in use.

Rope and pulley for raising and lowering, while not mandatory, are desirable.

Trestle ladders (A-type with center section which slides up and down) are used in maintenance work. These ladders are commonly used in pairs with a stage between them or in sets of four with two stages.

In selecting extension trestles, look for guides of adequate length, strong locks for the sliding section, and a safety spreader.

Telescoping ladders are mounted on rubber-tired ball-bearing wheels with floor locks. Maximum height of working platform is 15 ft. When down, they will go through an ordinary door or into an elevator.

Telescoping towers can be extended up to 49 ft. The man on the platform controls the travel through an electric push-button system. Another push-button control is located on the frame below, but the man above can lock the platform in place by pressing a safety button. Outriggers give stability.

Chain and rope ladders are for emergency use as a means of escape in case of fire or explosion, and for rescue work where rigid ladders cannot be used. These are not substitutes for permanent fire escapes.

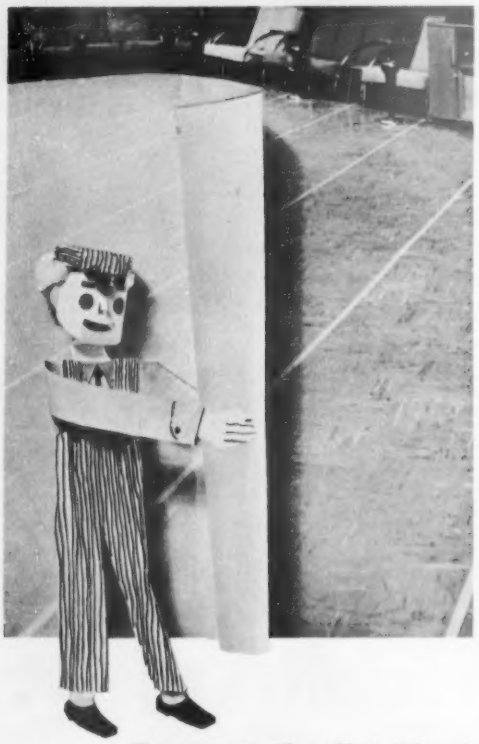
Crow's nest ladders. For many outdoor maintenance jobs the "crow's nest" ladder mounted on a truck is used. It is an extension platform ladder, securely mounted on the vehicle, which can be rotated in a complete circle and elevated at angles from 45 to 72 degrees from the vertical.

This device permits working over parked vehicles and is used for tree trimming, servicing street lights, police and fire alarm signals, inspecting overhead lines, connecting house services, and general emergency work. It can be lowered for traveling.

Safety Accessories

Ladder shoes. Whenever a portable ladder is used on anything but dry ground, there is possibility of the feet slipping. To overcome this hazard, several types of ladder shoes have been devised. They grip the surface by sharp points or by friction.

One type of sharp point is the



Not just clean— but

TEXINOL-CLEAN!

Removes the dirt film from your floors . . .

All-purpose TEXINOL Cleaner gets rid of *all* the dirt, grit and scum. Removes old film left by previous washings with ordinary cleaners.

Use TEXINOL for stripping as well as daily cleaning. Recommended for all flooring, both resilient and rigid. In fact, you can use it on *any* surface where water can be applied—metal cabinets, tile walls, lavatories, office furniture, etc. Needs no rinsing. Can't scratch or mar.

Learn why so many Maintenance Chiefs now specify TEXINOL exclusively. Clip the coupon or write for full information.

LEGGE SYSTEM

Walter G. LEGGE Company, Inc.
Dept. N-3, 101 Park Ave., New York 17, N. Y.
Branch offices in principal cities. In Toronto — J. W. Turner Co.

Send full information on Texinol, the all-purpose Cleaner.

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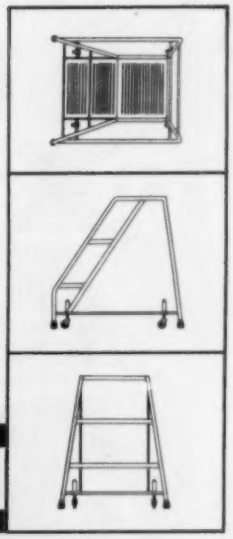
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CIRCLE 17 ON READER CARD



LOW C.G. -More Safety



BALLYMORE

Safety-Step LADDERS

WITH OR WITHOUT HANDRAILS



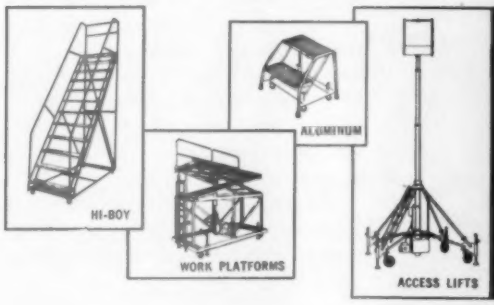
JUST as today's cars feature a low "c.g." for on-the-road safety, so Ballymore ladders feature a low "c.g." for all-level safety. The safe, wide-base pyramid design with a low center of gravity gives a new stability even at heights up to 15 feet.

Sturdily welded, corrosion-resistant steel and aluminum Ballymore ladders are mobile and can be moved easily on casters to any area. Simple tip-toe pressure anchors the rubber tipped feet to the floor and securely positions the ladder.

The full range of Ballymore ladders, from 1 to 12 step, with handrails and without, features built-in safety. You can equip your plant with a mobile stairway of safety.

CALL YOUR LOCAL DISTRIBUTOR TODAY

For illustrated catalog covering complete line, write to BALLYMORE COMPANY • WEST CHESTER 17, PA.



BALLYMORE

EQUIPMENT FOR WORKING *Safely* ABOVE FLOOR LEVEL

CIRCLE 18 ON READER CARD

CIRCLE 21 ON READER CARD



If you can't eliminate drips... *prevent slips with* SOL-SPEEDI-DRI®

Cleans, slip-proofs floors in a jiffy!

Here's low-cost accident insurance in a bag! Spread amazing SOL-SPEEDI-DRI carpet of safety on with a rake or broom...thirsty granules *pull deep deposits of oil, grease or liquid out of floor.*

Leave on, or remove and *reuse* until saturated! Mineral...won't burn! Each lb. contains over 13 acres of absorptive surface area. *... and no dust problem with SSD!*



Write today for generous **Free** *sample!*

SPEEDI-DRI DIVISION

Minerals & Chemicals Philipp CORPORATION

113 Essex Turnpike, Menlo Park, N.J.

CIRCLE 22 ON READER CARD



SAVE

✓ ACCIDENTS
✓ WASTE
✓ TIME
✓ MONEY

ON EACH CLEANING WITH

BOL' TABS®

Germicide

KILLS GERMS IN 30 SECONDS
Twenty Times Faster Than Phenol

BOL' TABS® TABLET BOWL CLEANER

Fast Dissolving — Self Mixing

ELIMINATES ODORS
Powerful — But Safe!
Cost Control on Each Cleaning
Removes Rust and Lime Film
Safe on Porcelain Enamel
Safe in Septic Tanks
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REDUCES COSTS of LIQUID ACIDS and POWDERS
BOL TABS The "Tablet" Bowl Cleaner

THERE IS A DISTRIBUTOR IN YOUR CITY

Horizon industries

400 Upper Midwest Bldg. - Minneapolis 1, Minnesota

metal spike; another is the abrasive shoe. The friction type depends upon frictional resistance for the gripping qualities of cork, lead, and rubber or neoprene with interwoven cord.

Another type made of cotton asbestos material and interwoven wire combines the two principles. Suction cups are used in still another type.

Ladder shoes become less effective through wear, especially when exposed to oil and grease on the floor. Consequently, they should be inspected regularly.

Stabilizers. When a ladder is used on an uneven surface, hydraulic stabilizers attached to the feet keep a ladder firm and steady. These can be attached to any straight or extension ladder.

Maintenance

Inspection. Look for: loose rungs or steps; screws, bolts, and other metal parts broken or missing; cracked or broken uprights, braces, steps or rungs; slivers; worn or damaged shoes.

Defective ladders should be marked and taken out of service until defects have been corrected. If beyond repair, they should be destroyed promptly.

Records of the condition of each ladder should be kept.

Storage. Ladders should not be stored where they will be exposed to weather, nor near radiators, stoves, or steam pipes.

Protective coatings. Two coats of linseed oil, spar vanish or a clear wood preservative will increase resistance to weathering without adding noticeably to the weight.

Painting is permitted by the ASA Code, if ladders are inspected before painting by experienced inspectors acting for the purchaser and ladders are not for resale. This practice, however, is condemned by many users and is forbidden in some states.

Wood preservatives, which consist of toxic chemicals in non-aqueous solution, prolong the life of wood exposed to weather or in contact with the ground. They offer special protection at the joints or rung holes and tenons.

Preservatives of the NSP type (non-swelling, paintable) do not interfere with subsequent painting and varnishing.

Get lasting protection from weeds and grasses this easy low-cost way

with UREABOR® 31

YOU CAN WEED-PROOF 10,000 SQUARE FEET IN TEN MINUTES...



...it's the easiest way to kill weeds and grasses

A SPECIAL SPREADER simplifies and speeds the UREABOR 31 applications at low rates with accuracy. Spreader holds enough UREABOR 31 to treat 1250 sq. ft. without refilling; weighs a mere 6 lbs. Width of the swath can be adjusted.

STANDARD PACKAGE IS 50 LBS. UREABOR 31 is packed in multiwall paper sacks for easy handling—easy storing. A convenient package, easily disposable, for spotting at predetermined intervals to facilitate large-area applications.

UREABOR 31 IS 3 HERBICIDES IN 1 The plant-destroying powers of 3 proven herbicides are combined in this granular mixture of sodium borates, substituted urea, and trichlorobenzoic acid to yield fast, long-lasting, nonselective results.

UREABOR 31 is a special weed killer for industrial grounds. It lowers maintenance costs... protects property... and improves appearance. UREABOR 31 is effective on a greater variety of weeds and grasses than any other herbicide now on the market. A single dry application gives year-long control! Yet it takes only 1 to 2-lbs. per 100 sq. ft. to do the job! As a granular material, UREABOR 31 is always ready to use... and safe to handle. It's a big time saver too... any man can easily weed-proof ground at the rate of 1,000 square feet per minute.

Write for literature now!

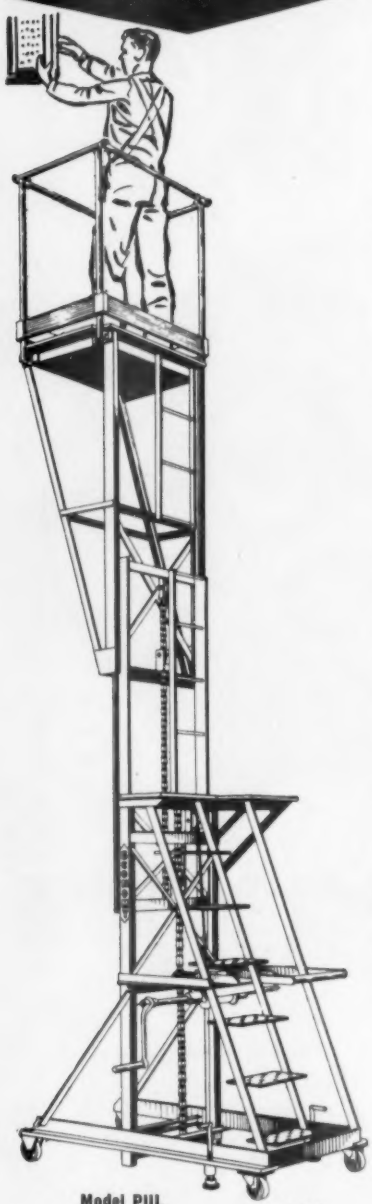
U.S. BORAX

630 SHATTO PLACE, LOS ANGELES 5, CALIFORNIA

CIRCLE 20 ON READER CARD

CIRCLE 19 ON READER CARD

Speed overhead servicing— Stop accidents with a HI-REACH TELESCOPER



Model PUL (illustrated)
Lift 10'9"—$370.00
Lift 15'0"—$400.00

Model LB
Lifts 20' to 40'
$1510.00 up

Custom built Hi-Reach Telescopers up to 100 ft.
Write for complete catalogue

Headquarters for standard and special built overhead servicing lifters and material handling equipment since 1901.

ECONOMY ENGINEERING
4518 W. Lake Street, Chicago 24, Ill.

Come Clean!

With effective sanitation maintenance

PROPERLY PERFORMED, sanitation maintenance can reduce hazards to employee health and well-being, and should contribute to an environment permitting efficient performance on and off the job.

Covering the entire plant and grounds, benefits of sanitation maintenance also extend into the homes of employees and throughout the community.

Sanitation maintenance, more properly termed *industrial sanitation,* is a concern of management, supervision, and employees, sometimes of outside agencies, such as health, fire, safety, etc. But it will rarely be satisfactorily performed if left a general responsibility of all concerned. It is only when sanitation maintenance is centered as a major duty of an individual in man-



In some situations the ordinary push broom proves the most economical way of cleaning a floor. (Textile Fibers Dept., Martinsville Plant, Du Pont)

FOR SAFETY'S SAKE

HILD

INDUSTRIAL MAINTENANCE EQUIPMENT



INDUSTRIAL VACUUM CLEANERS FOR WET AND DRY PICKUP

Cleans floors, walls, ceilings, machinery, oil sumps, water, metal chips, etc. Over thirty models to choose from. Every size from 6 to 55 gallons with ¾ to 7 h. p. motors. Inside or outside type filter bags. Dozens of attachments for use with 1½", 2" or 3" hose. Illustrated unit (model 655) designed for use on any standard 55 gallon drum. Excellent for furnace cleaning.

FLOOR SCRUBBING AND POLISHING MACHINES

Twelve models from 12 to 24 inch size—designed for maintaining factory or office floors. Every practical operating and safety feature — momentary contact safety switch, fully adjustable handle, non-marking bumpers, 3 conductor cord plus Hild heavy duty motor and silent gear unit for years of dependable operation. Available with shower-feed tank and brush.



WRITE FOR COMPLETE LITERATURE AND A FREE DEMONSTRATION IN YOUR PLANT

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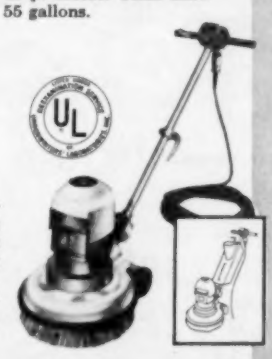
UL LISTED EXPLOSION PROOF MAINTENANCE EQUIPMENT

Every model completely UL Listed for use in Class I, Group D and Class II, Group G hazardous locations.



EXPLOSION PROOF VACUUM CLEANER

Five models available with a complete selection of attachments for almost every wet and dry cleaning job in refineries, grain mills, arsenals, food plants, etc. Totally enclosed ¼ h. p. motor. Tank sizes from 6 to 55 gallons.



EXPLOSION PROOF FLOOR MACHINES

Designed for scrubbing and polishing all types of floors in hazardous atmospheres such as gas pumping stations, operating rooms, paint factories, etc. Every detail designed and built to the very highest safety requirements.

HILD FLOOR MACHINE CO., INC.
1217 W. Washington Blvd.
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Gentlemen:
Please send complete information on Hild Industrial Maintenance Equipment.

Signed_____
Firm_____
Address_____
City_____ Zone____ State_____

CIRCLE 8 ON READER CARD

CIRCLE 24 ON READER CARD

GO UP WITH CONFIDENCE ON
BALLYMORE
Safety-Step
LADDERS



GRIPS THE FLOOR ROLLS EASILY

Now . . . Ballymore combines welded steel or aluminum safety treads with wide-base pyramid design to offer extra safety and stability. Ballymore ladders let you climb quickly . . . and with confidence—any required height up to 15 feet. Spring-mounted casters that retract when you step on the first step is another safety "plus." They let you roll the ladder easily, yet grip the floor surely to provide safety at all levels.

All welded, corrosion-resistant Ballymore Safety-Step Ladders are available in four types—with 47 models to choose from. Step up to a new standard of safety today.

WITHOUT HANDRAILS



WITH HANDRAILS



For illustrated catalog covering complete line, write to
BALLYMORE COMPANY,
WEST CHESTER 17, PA.

BALLYMORE
EQUIPMENT FOR WORKING
Safely ABOVE FLOOR LEVEL

Call your
LOCAL DISTRIBUTOR

agement or supervision that it stands a chance of being well and consistently done.

Industrial sanitation needs time, study, acquired experience and planning applied to it by responsible supervision; otherwise, labor and materials are wasted, production is impaired, and employees are unhappy and perhaps endangered.

Maintaining high standards of industrial environment involves the following tasks:*

1. Structural cleaning.
2. Floor maintenance.
3. Maintenance of personal service facilities, food service.
4. Machine and equipment cleaning, both in place and in special stations and facilities.
5. Insect and rodent control.
6. Collection and disposal of refuse and product wastes.
7. Operation of laundry and uniform services, also sanitation stockroom and supplies.
8. Protection of raw materials and finished products against damage and deterioration.
9. Supervision of plant security personnel.
10. Care of exterior areas—parking lots, roadways, walks, landscaping.
11. Maintenance of safe working conditions.
12. Maintenance of individual hygiene facilities.
13. Over-all sanitary supervision.

Plant Design and Layout. Good design and construction mean that a plant can be kept clean, orderly and free from hazard with much less time, effort, and expense. These are characteristics of the modern plant:

1. Aisles: Wide enough for movement of traffic, with floor lines marking off work stations and storage areas.

2. Space: Sufficient room for the individual to work.

3. Storage: Adequate and convenient for materials and tools.

4. Materials handling: Layout planned for material flow; efficient equipment and methods.

5. Ventilation: Good general ventilation, plus local exhaust ventilation to remove air contaminants at source.

*From *Building and Equipment Sanitation Maintenance*, by J. Lloyd Barron and Albert J. Burner. Published by Association of American Soap and Glycerine Producers, 242 Madison Ave., New York.

CIRCLE 25 ON READER CARD→



Over-the-aisle brackets for power cords and air hoses keep area clear of tripping hazards.

6. Floors and walls: Of construction and materials easy to keep clean.

7. Lighting: Ample, well-distributed artificial light; effective use of available daylight.

8. Personal service facilities: Up-to-date, well-ventilated washrooms with off-the-floor fixtures for easy cleaning. Locker rooms with ventilated, sloped-top clothing cabinets built flush on concrete bases for easy maintenance. Clean, light, airy, and inviting in-feeding facilities, with well-designed food handling and serving equipment of sanitary polished metal and plastic.

9. Waste removal: Adequate facilities to prevent congestion and disorder.

Organization. Back of every effective maintenance program is an enlightened management. Carrying out the program requires a well-supervised crew of able-bodied intelligent employees, trained in their duties and provided with modern cleaning equipment and supplies.

A manual of standard procedures is helpful in training and supervising the maintenance force. The manual may consist of a few typewritten sheets or a sizable volume, depending on the size of the plant and the complexity of maintenance problems.

Women are often employed for lighter duties, such as office cleaning and routine care of women's washrooms.



E. W. Ferry Screw Products, Inc., daily produces more than two million fasteners of many types for the automotive, airplane and appliance industries. This company also pioneered volume production of stainless steel screws.

Pittsburgh COLOR DYNAMICS® Painting System increases efficiency...improves morale

- **Lessens physical fatigue of workers**
- **Relieves eyestrain**
- **Helps eliminate accident hazards**
- **Costs no more than ordinary painting**

• **Both workmanship and production** were improved by Pittsburgh COLOR DYNAMICS in the E. W. Ferry Screw Products, Inc., Cleveland plant. It can help *your* firm achieve like results.

• **This scientific painting system,** based on reactions to the *energy* in colors, improves morale by making work areas more cheerful. Focal and eye-rest colors on machines help operators see their work better, thus reduce fatigue, boost efficiency. Safety colors on controls, material-handling equipment and traffic lanes help reduce accidents.

• **All of these benefits** of COLOR DYNAMICS cost no more than ordinary maintenance painting. Why not let us give you full details?

• Send coupon for free copy of booklet which explains what COLOR DYNAMICS is and how it can be applied. If you wish, we'll also gladly prepare a detailed color plan of your factory without cost or obligation. →



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Pittsburgh Plate Glass Co., Paint Div.,
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CIRCLE 26 ON READER CARD

COTTERMAN

WELDED STEEL SAFETY LADDERS

For Filing Rooms—Stock Rooms—Vaults



SAFE
•
STRONG
•
EASY TO MOVE
•
EASY TO CLIMB
•
NON-SKID STEPS

Frame work made from heavy gauge 1" diameter round steel furniture tubing, with all joints electrically welded. Mounted on Swivel Brake Casters which allow the ladder to be rolled freely when no one is on it. When you step on the ladder the rubber cushioned legs rest on the floor and prevent rolling.

Made in 13 heights—from 12" 1 Step to 117" 13 Step, and in 4 width—18", 20", 26" and 32", with and without hand and platform rails.

We also manufacture the

COTTERMAN TRUCK - N - LADDER

A Truck and Ladder combined in a single unit.

Write for Folder No. 56-N for complete information and prices on both these items.

Manufactured by

I. D. COTTERMAN

123 W. Spring Ave. Naperville, Ill.

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SAFETY CLAMP

(Patented. Other Patents Pending)



LOCKS INSTANTLY!

Absolute Safety Assured

Forget the dangers of high climbing ...use TULITO SAFETY CLAMPS. Thousands are now in use on every type of structure.

FULLY APPROVED BY INDUSTRIAL COMMISSIONERS AND SAFETY ENGINEERS.

MEYER MACHINE, INC.

137 Bluff Street Red Wing, Minnesota

CIRCLE 27 ON READER CARD

Cleaning Equipment

Vacuum cleaners. Heavy-duty types are available in several models and capacities, with a variety of attachments. They are useful for removing dust from corners and overhead places, as well as for floor cleaning.

Central vaccum systems are often used where dust sources are close together and a large volume of dust must be removed. Cleaning implements are attached to inlets located at convenient intervals. Central systems are used to advantage for the removal of dust in buildings housing milling equipment, and in some hotels and office buildings.

For most industrial uses, portable cleaners are satisfactory, since dust sources are usually widely distributed. Portable cleaners are also used for wet pick-up—scrubbing solutions, spillage, etc.

Floor machines of several types handle heavy jobs of floor cleaning efficiently. With them, floors can be scrubbed, dry-cleaned, waxed, or polished. Attachments of various types increase the usefulness of floor machines.

Crusts of dirt, oil, and metal cuttings can be removed with revolving wire brushes much more quickly and thoroughly than by hand spudding.

For finer finishing, steel wool rolls can be used. A vacuum pick-up for collecting dust is essential for dry operations. Suction in connection with a scrubber damp-dries the floor quickly. Scrubbing, rinsing and drying can be done with a minimum of interruption to production.

Floor machines may be purchased or rented. Some manufacturers have service men who will train maintenance crews in cleaning methods.

Hand cleaning. Brooms, brushes, mops, etc., are needed to supplement mechanized cleaning equipment. Tools of good quality are more durable and encourage better work. For dry sweeping, treated sweeping cloths or treated cotton yarn mops are preferable to bristle or fiber push brooms which have a tendency to raise dust. Most large organizations patronize industrial laundries which furnish cleaned and treated floor mops and sweeping cloths.

Magnetic sweepers pick up iron and steel chips, filings, nails and tacks from floors, driveways and walks, where such material may cause fire, explosion, or personal injury. This type of sweeper has a rotary non-electric magnet, detached from the unit for removal of accumulated metal.



One way to keep ahead of the trash problem is to make the job of disposal easy for everyone.

Larger power-driven models are used outdoors for sweeping large

WALL ASH TRAY PREVENTS FIRES



Steel ash trays fastened to walls, posts, columns, work benches and machines within easy reach and *plainly visible* will serve as a constant reminder to workers to snuff out smokes and not throw butts on the floor nor into waste baskets or plumbing fixtures. Tray may be filled with sand or oil absorbents. A screen clipped beneath the tray sifts out butts without need of removing tray from wall.

BUTT-SNEAKERS come in two sizes. Oven baked on FIRE ENGINE enameled finish. INEXPENSIVE TOO!

Write for literature and prices.

SAFETY FLOOR PRODUCTS

3038 West 84th Place Dept. N3

Chicago 52, Illinois

CIRCLE 28 ON READER CARD

areas. These remove nuts, bolts, and other ferrous objects around hangars and roadways where they might be sucked into jet engines.

Aisle marking. Wide, clear aisles indicate a well-kept plant. White lines are constant reminders to keep them free from obstruction and to pile stock within designated areas. Lines can be renewed quickly and economically with an aisle-marking machine.

Plastic tape in white and colors is also used for marking aisles and storage areas. It is resistant to moisture and most chemicals. Lines can be changed and damaged parts replaced easily.

White is standard for highway lane lines and is preferred for interior floor marking.

Trash containers at convenient locations help to keep litter off the floor. Containers with self-closing lids are best, particularly where oily rags and waste are deposited. Containers painted a distinctive color call attention to their presence.

Large containers (4 to 8 cu. yds.), equipped for automatic attachment and release from a disposal truck, may be located strategically on the plant grounds. The smaller containers are emptied into these by the housekeeping force.

Steam-cleaning units, which deliver jets of steam and cleaning solution under high pressure, are used to clean some types of processing and fabricating equipment and to remove stubborn deposits of dirt from floors, walls, and ceilings.

Smoking areas are now provided in most plants where smoking on the job is not permitted. Receptacles which will not slip and spill their contents should be provided for cigaret butts and ashes.

Cleaning Supplies

Improvements in mechanical cleaning equipment have been matched by the development of more efficient cleaning materials.

Disinfectants and deodorants are useful, particularly for washrooms and garbage cans. They are not substitutes for detergents.

Odors may indicate unsanitary conditions. However, chronic odors, as from urinals, indicate either bad fixtures, or failure to clean by removing scale and decomposing organic matter. Improved cleaning techniques can almost always eliminate the seeming need for deodorants.

Much research has gone into cleaning techniques. Manufacturers can furnish helpful data on maintenance methods.

Detergents. Water actually does the cleaning but usually it needs the aid of a detergent—soap, an alkaline cleaner, or a synthetic cleaning compound. Soap is a detergent, but not all detergents are soaps.

There are three types of dirt: Water-soluble matter, oils and greases, and inert solids.

A cleaner removes dirt by dissolving, emulsifying, or suspending it.

Soap is one of the oldest cleaners and a most useful one. It has one serious defect—the formation of curds in hard water. As soaps leave a film, careful rinsing is necessary, particularly in those compounds which do not include adequate sequestering or chelating agents.

Synthetic detergents are derived from sources other than fats and oils. Petroleum and coal tar derivatives and the by-products of some industries provide the raw materials. These cleaners can be used with hard water.

Alkalis such as washing soda, soluble silicates, and various phosphates form the third class of cleaning materials. Compounds of these are marketed under a variety of trade mades. They are useful where sudsy cleaners are not desirable, but dilution strengths must be closely controlled to avoid damage to surfaces. They do not form a slippery film on floors.

Hand protection. Since many cleaning materials are too powerful for safe use on the skin, rubber or plastic gloves are often needed.

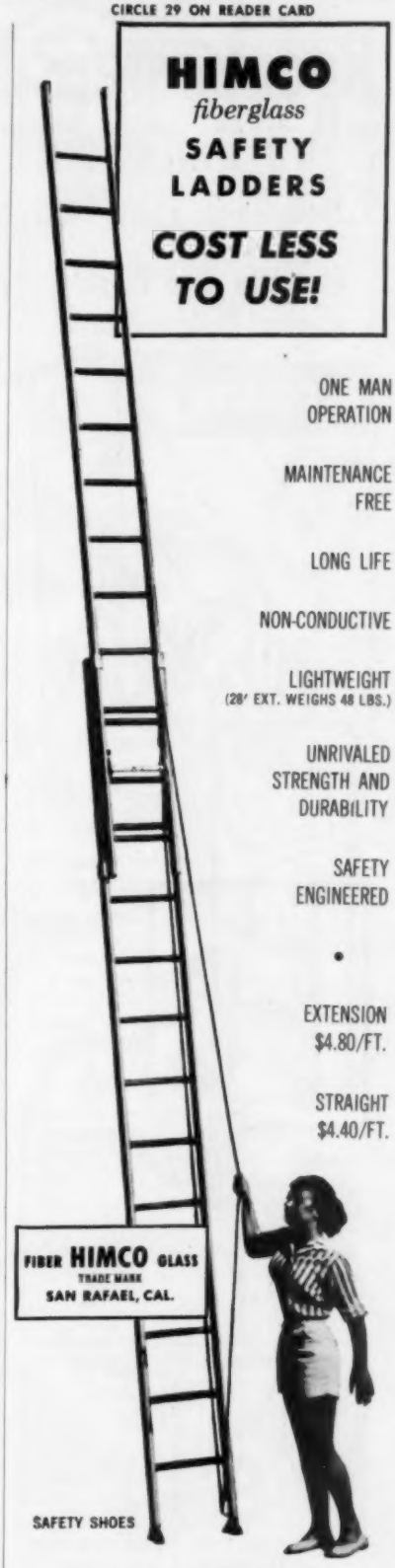
JANITORS' AIDS

Vacuum cleaner — Heavy-duty with attachments
Floor machine — Size, type, and attachments for the job.
Brooms, brushes, mops, buckets.
Cheesecloth.
Rubber or plastic gloves.
Bowl and urinal swabs.
Detergents — Soap or synthetic.
Disinfectants and deodorants.
Resilient floor coating.

CIRCLE 29 ON READER CARD

HIMCO
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SAFETY
LADDERS
COST LESS
TO USE!

ONE MAN OPERATION
MAINTENANCE FREE
LONG LIFE
NON-CONDUCTIVE
LIGHTWEIGHT (28' EXT. WEIGHS 48 LBS.)
UNRIVALED STRENGTH AND DURABILITY
SAFETY ENGINEERED
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EXTENSION $4.80/FT.
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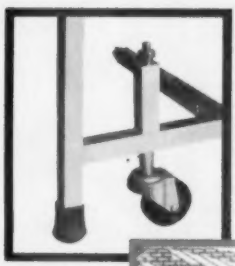
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SAN RAFAEL, CALIF.

CIRCLE 30 ON READER CARD

Roomy steps
Solid underfoot
Easy to handle

Alco-Lite 1 to 12 step all-steel Ladder Stands

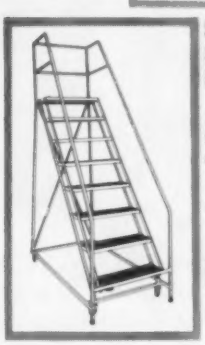




Roll Easily!
Special casters retract automatically under users weight—9 steps and over feature foot activated front caster brake.

Sturdy!
SQUARE tubular steel frame. All-welded steel construction. Safe expanded metal treads.





Standard and Spread-Base Design!
All models finished in rust-resistant aluminum.
FREE CATALOG!
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Floors Can Floor You

But proper maintenance makes it less likely

PROPER CARE of floors extends their life, makes them safer, and enhances their appearance.

Under most conditions, flooring materials can be cared for with a protective coating.

Dusting of concrete can be checked by treating with a sealer. If color is desired, a penetrating dye or a floor enamel may be used.

Linoleum, asphalt tile, vinyl tile and rubber tile are resilient and decorative. Care consists of cleaning and protecting the surface with a suitable coating.

Hardwood flooring in its natural state dries out and cracks and splinters under traffic. Scrubbing raises the grain of the wood and excessive moisture causes it to swell and warp. Sealers produce a durable, penetrating finish.

Resilient floor coatings protect the surface and preserve appearance. They make regular cleaning easier by keeping dirt from being ground into the floor. Good coatings, properly applied, can provide a slip-resistant surface.

Water emulsion (self-polishing) coatings can be divided into two general groups—those with a high wax content and those with a high resin content. Other ingredients, such as colloidal silica, are sometimes added to increase the slip-resistant qualities of the treatment.

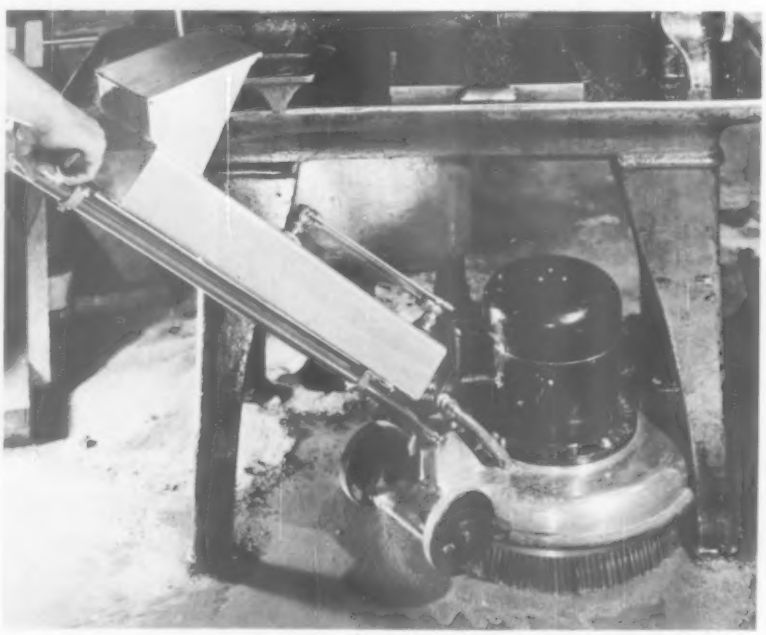
Water emulsion coatings can be used on all types of floors. Solvent type waxes which require buffing, cause deterioration of asphalt and rubber.

Floor cleaners. Strong alkalis and coarse abrasives are injurious to most types of flooring. Detergents that are both effective and mild will meet most floor maintenance needs.

Cleaners should not leave a slippery film. Soap is permissible for concrete, common brick, wood block and mastic. Marble and smooth tile require a detergent that leave no slippery residue.

Standards. Floor coating and finishing materials are listed in three classes by Underwriters' Laboratories *Accident Equipment List*:

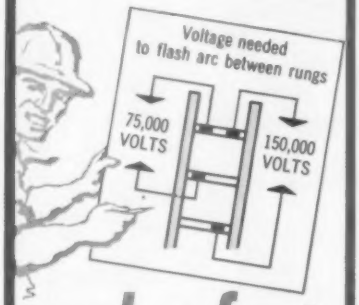
I. Floor Treatment Materials
   1. Water-base materials
   2. Fillers, sealers, varnishes and



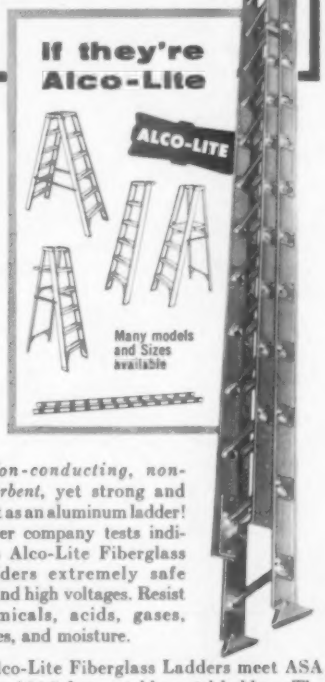
There are scrubbers for small jobs as well as large jobs. (Hild Floor Machine Co.)

CIRCLE 31 ON READER CARD

fiberglass ladders are strong



and safe



Non-conducting, non-absorbent, yet strong and light as an aluminum ladder! Power company tests indicate Alco-Lite Fiberglass Ladders extremely safe around high voltages. Resist chemicals, acids, gases, fumes, and moisture.

Alco-Lite Fiberglass Ladders meet ASA Code A14.2 for portable *metal* ladders. The wider side rails are SOLID fiberglass—not plastic covered soft wood. The wide steps and rungs are high tensile strength aluminum. More riveting and bracing throughout!

Ladders safe, strong, more rigid, have longer life, because of exclusive design and construction. Maintenance negligible. *SEND FOR CATALOG!*

Original Manufacturer of ALUMINUM Ladders

Aluminum Ladder Co.

West Darlington Street Ext.

FLORENCE 12 S. CAROLINA

similar materials
3. Detergents
4. Abrasive-grit-bearing liquids
5. Waxes other than water-base
6. Sweeping compounds

Materials listed have been found to have slip-resistant characteristics of not less than 0.5, as determined by the UL static friction test. Materials are listed according to fire hazard in the *Gas and Oil Equipment List*.

II. Oil and Grease Absorbents

III. Walkway Construction Materials. Includes floor plates and stair treads made of:

1. Natural stone
2. Composition
3. Abrasive-grit-surfaced materials.

Maintenance methods. Maintenance of hard and resilient floors is of two types:

1. Routine care (usually daily) is designed to keep up the cleanliness and appearance of the floor. It may consist of dry or semi-dry methods, such as sweeping, dust mopping, buffing or damp mopping.

2. *Periodic maintenance* removes by scrubbing the more stubborn soils that have survived routine methods. With resilient floors it may include removal of worn and discolored finishes in preparation for a new coating.

Oil Absorbents

Most of the oil and grease absorbents now used in industry are of the all-purpose type effective for absorption of water, paint, ink, food wastes, chemicals and other liquids as well as oil and grease.

Absorbents are used in machine shops, factories, oil refineries, chem-



Even under adverse conditions, oil absorbents minimize hazards. (Wyandotte Chemicals)

CIRCLE 32 ON READER CARD

5 ft. high



weighs only 35 lbs.

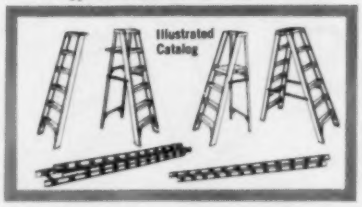


Although made for heavy warehouse duty—it is easily handled by one person

If storage is a problem . . . order the folding model.

Made of high tensile strength aluminum alloy. Extra bracing and riveting. Extremely strong, yet lightweight. Roomy, non-slip type steps and platform. Handy platform and hand rails. Rubber front feet and rubber tire casters on rear legs. Surpasses ASA and MLA standards.

All types and sizes of Aluminum Ladders



Original Manufacturer of ALUMINUM Ladders

Aluminum Ladder Co.

West Darlington Street Ext.

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CIRCLE 33 ON READER CARD



Dries and cleans floors—Absorbs water, oil and grease—Eliminates scrubbing. Prevents slipping accidents.

Dri-Rite quality absorbents have been proven in use by large and small industrial plants for many years.

Exclusive Territorial Distributorships Available

The DRI-RITE COMPANY

100 W. Chicago Ave. Chicago 10, Ill.

ical plants, railroad shops, aircraft hangars, bus and truck terminals, garages and filling stations, institutional kitchens, food processing plants, boiler rooms and many other locations.

For winter use on ice and snow they provide increased safety underfoot and better traction for vehicular traffic.

Absorbents may be spread over the floor by shovel, broadcast by hand, sprinkled from an open-top container, or spread by an ordinary garden-type fertilizer.

Commercial absorbents have a much greater absorbing capacity than sawdust, waste or rags. They are non-combustible and less bulky.

Sweeping compounds keep down dust from dry sweeping. These are listed by Underwriters' Laboratories in two groups: Class I, noncombustible; Class II, slow burning. Tests include combustibility, behavior on heating and spontaneous heating characteristics of these compounds.

References—Housekeeping, Sanitation, Maintenance

National Safety Council

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FIBER GLASS

Reinforced Plastic Ladders

Utilizing sandwich construction balsa core laminated with fiber glass reinforced plastic. Aluminum, plastic coated aluminum, or wood rungs are plastic welded to rails, resulting in tough yet smooth splinter-free finish resistant to chemicals, heat and water absorption. Yellow side rails for safety. Flat aluminum steps used in step ladder. Available in extension, single sectional and step ladders.



- NON-CONDUCTOR
- DURABLE
- STRONG
- LIGHT



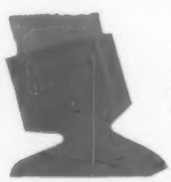
PUTNAM Rolling Ladder Co., Inc.

32 Howard St., New York, N.Y.

CIRCLE 34 ON READER CARD

"PROTECT YOUR CLIMBERS"

With Johnson All Rubber Ankle Action Dielectric Ladder Shoes. The Choice of Ladder Climbers in all parts of the world.



WORK SAFELY ALL-WAYS

FOR EXTENSION LADDERS

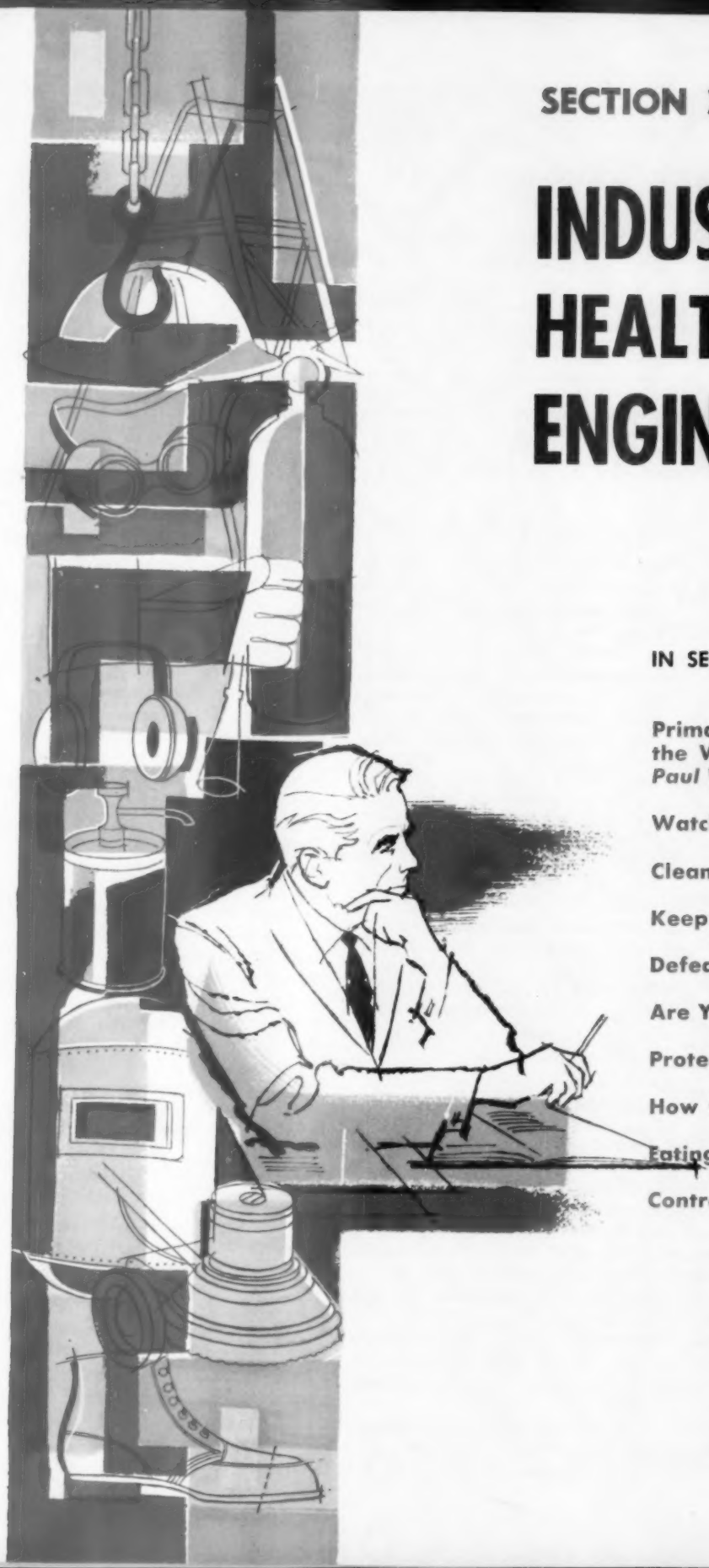


FOR STEP LADDERS

Our Step Ladder Shoes are popular with maintenance men in homes, office buildings, schools, hospitals and etc. Dealers in all principal cities. Ask your Safety Supply Dealer or send direct. Your order will be shipped promptly.

Johnson Ladder Shoe Inc. **Eau Claire, Wisconsin**

CIRCLE 35 ON READER CARD



SECTION 3

INDUSTRIAL HEALTH ENGINEERING

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Primary Consideration Is The Worker's Health

By PAUL W. RUSH, M.D.



Paul W. Rush, M.D., has been medical director of Corn Products Company for 35 years. He established a preventive medical program that includes periodic physical examinations, physical and mental health education, personal counseling, and a home nursing service. Dr. Rush planned the company's medical center, considered a model by other industrial physicians. The center has extensive diagnostic, laboratory, and treatment facilities. Dr. Rush developed a unique medical record system in which detailed information is maintaind in a simple manner. His method, which has been copied by many industries, and is used by the State of Illinois, gives complete individual histories and makes data accessible to health statisticians.

ENGINEERING maximum provisions for the workers' health and safety into an industrial operation tends to enhance the profit margin and minimizes problems of production and employee relations.

Every industrial operation and procedure has a human factor. And the health, safety, alertness, state of mind, physical fitness and comfort of this human has a direct effect on the degree of success and efficiency attained in the operation or plant.

I believe the engineer should keep an image of the worker and his welfare in mind in every machine design, factory layout or work procedure.

This important cog in production machinery is a complex of intelligence, emotions, ambitions, abilities, resentments, satisfactions, drives and varying physical capacities, but nonetheless an ever-present cog which cannot be disregarded.

In addition, experience teaches that this complex worker, on the average, is ill informed on how to go about preserving his health and safety.

Added to this are common human chance-taking attitudes: "never close the door until the horse is gone," "this can't happen to me," "don't look before you leap;" and the vast majority of workers have elementary, inaccurate or no knowledge of the physical, chemical or toxic properties of material with which they may work, the effect on health of the conditions under which they may work, or what they can do individually to adequately protect themselves from any exposures or stresses they may meet on their job.

Two ways seem open to management in its approach to improving worker health and safety:

1. Educate and train each worker in the safe, healthful way to do the job he or she is assigned.

2. Engineer and build into each operation all practical health and safety factors.

The first method is a never-ending chore and makes the use of sound health and safety measures a function of the individual.

Workers should be carefully trained, but past experience teaches that often the individual employee disregards precautions required on his job. An accident or occupational illness results.

The second method makes health and safety measures a consideration of a team of trained people: the engineer, hygienist, doctor, architect, and safety director.

Through collaboration of these specialists, maximum measures and conformance to state and federal occupational health laws can be planned and built into every operation. On the drawing board it is relatively easy and inexpensive to incorporate minimum-hazard conditions, but not so simple, practical or inexpensive when the operation exists.

Optimal environmental conditions of temperature, ventilation, light, humidity, noise, radiant heat, and radiation are not only healthful but stimulate safer performance and higher productivity.

Consideration of human comfort and good will through washroom, toilet, shower, locker room and drinking facilities encourages personal hygiene and removes a source of irritation that may cause employee-relations problems.

Streamlined factory operations and work routines that are easily executed and require a minimum of mental and physical effort on the part of the worker often speed production and reduce fatigue, labor turnover, and personnel problems.

Consideration of adequate food service, cafeteria, canteen, or lunch wagon arrangements are important. A menu of nutritious foods, pleasant surroundings, refrigeration, convenient hand washing, and toilet facilities for food handlers tend to cut down incidence of upper respiratory infections, stomach and intestinal upsets and other infectious diseases.

Occupational disease from toxic fumes, gases, dusts or other deadly materials can be prevented by confining such materials to closed processes, isolated rooms, hoods, or by regulating the air flow pattern to carry these substances away from the workers' breathing zone or skin. (In venting such materials, the possibility of significant air pollution in the community should be determined.)

Any operation — large, small, experimental or temporary — needs health and safety planning. I believe

this is more true in the smaller plant, with its small work force, especially when work may be seasonal or highly competitive.

Ways of providing a healthful, safe industrial setting are detailed in many books and articles. Much human suffering and expense could be saved if this material received constant attention and application.

I should like to add one personal observation, not having to do with occupational disease and not primarily an engineering problem.

I refer to the ordinary diseases of life – the costliest industrial health problems – especially the degenerative diseases, hardening of the arteries, heart trouble, arthritis, and similar ailments. These, along with acute infectious diseases, are the ones that cost industry dearly.

I would like to suggest that consideration be given to plant medical departments with a program that goes beyond the care of industrial injuries or occupational diseases. Such medical services might be oriented toward the task of helping healthy workers stay well, and educating those with already detectable disease on means they may use to slow up or arrest the progress of their condition.

Watch That Washroom

And provide adequate lockers, too!

HEALTH AND CONTENTMENT are by-products of sanitary, modern washrooms and lockers in industrial environments. And when planning new facilities, up-dating old ones or expanding washrooms and locker areas currently in use, consider these elements:

1. Ratio of fixtures to workers.
2. The convenience of users.
3. Ease of maintenance.

Attention to these requirements when a building is planned will insure sufficient space and convenient locations, both for users and for plumbing locations. Later it may be necessary to fit facilities into less satisfactory space and at higher cost.

Installations which were originally adequate may not be satisfactory a few years later. Plant growth and deterioration or obsolescence of equipment may change the picture. A survey will show the changes necessary to bring facilities up to current standards.

There comes a time when the shortcomings of an old washroom can't be hidden by a coat of fresh paint. Appearance may be improved temporarily but old fixtures, poor lighting, and other defects will remain. Twenty years is regarded as the maximum useful life of fixtures in industrial and public buildings.

Location. Planning can minimize travel time between job and washroom.

Lockers, toilets and lavatories may be in one central location or scattered through the plant, depending on its size, layout and type of operations.

In smaller plants, washrooms and lockers are usually near the entrance.

Toilets and lavatories should be not more than 200 ft. away from any work place. In multi-story buildings, one on each floor is desirable. If that is not practicable, they should not be more than one floor above or below the work place. A single washroom and locker room may be sufficient for a compact plant employing fewer than 500 persons.

Washrooms in large one-story buildings usually are scattered throughout the building. Where there are many small isolated buildings, as in chemical plants and railroad yards, or where much of the activity is outdoors, a centralized building may house all these facilities.

Accommodations should be located so that employees will not have to cross highways or railroad tracks to reach them.

When lockers and washrooms of a large plant are near the main entrance, lavatories and toilets are often scattered through the plant. This saves workers' time and makes

LIMITS FOR VARIABLES INFLUENCING COMFORT AND SAFETY

(Ross A. McFarland in *Mechanical Engineering*, May 1954)

Variable	Desirable	Max. or min. value
Ventilation	Sufficient additional fresh or recirculated odor-free air to remove all odors	20 cfm of fresh air
Air Temperature	Ambient temperature adjusted to give effective temperature of 63-71 ET (winter) or 66-75 ET (summer)	70-72 F dry bulb
Air Velocity	Adjusted to ambient temperature to give appropriate cooling power without drafts	40-60 fpm
Humidity	Adjusted to air temperature and velocity to maintain comfort	25-50% relative humidity
Carbon Dioxide	Not a requirement as long as ventilating requirements for removal of odors are met	0.5-1.0%
Carbon Monoxide	None	0.003%
Noise	Conversation at least 3 ft with no extra effort	80-85 db over all; 50-60 db in 1200-2400 band
Vibration	Below threshold of perception	0.002 in. at 20 cps or more

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it possible to close the main room during working hours, lessening danger of theft and need for close supervision.

Separate washrooms and lockers are desirable for departments with exposure to excessive dust, dirt, heat, vapors, or moisture. These need additional lavatories or shower baths.

Offsetting the advantages of scattered facilities is the higher cost of installation and maintenance. Central toilet and washing facilities are often preferred where women are employed. In some plants a full-time attendant may be needed.

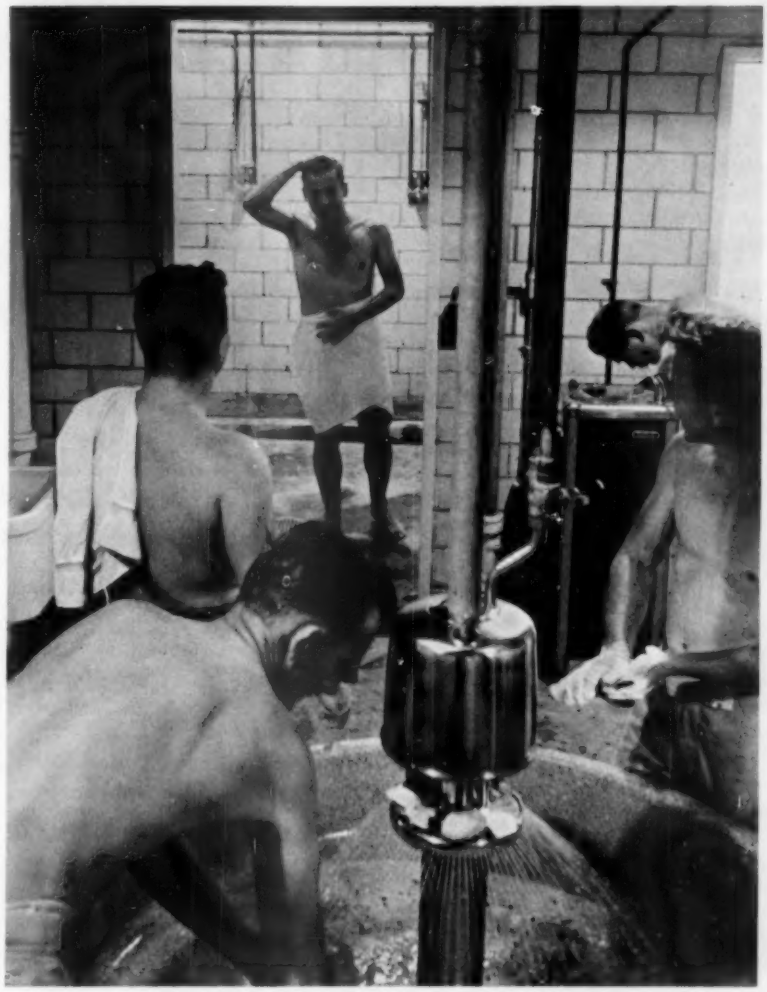
Large plants with underground passageways connecting buildings and departments often locate personal service facilities along these corridors, conserving space for manufacturing operations. Another space-saving method is to locate facilities on balconies.

Light. Fixtures should provide sufficient light in all parts of the room. Walls, ceilings, and partitions in white or light colors conserve light and encourage cleanliness.

Ventilation. Unless the washroom has sufficient outside windows for natural ventilation, forced ventilation will be needed.

Floors and walls to a height of at least 6 in., should be of impervious material, such as glazed tile or concrete with good friction characteristics.

Walls should form a tight joint at the floor level, or there should be a cove base at least 6 in. high Walls should be impervious to water to a height of at least 5 ft. Wall and ceiling surfaces should be washable.



With drinking fountains, showers, and washing facilities like these, your workers would be as happy as this group of employees seems to be.

Wash Fixtures

Group washing equipment. In industrial plants, institutions, schools, and other establishments where facilities must be provided for large groups, circular wash fountains are the most frequent choice.

Eight to 10 users can be accommodated at a 54-in. circular fountain and 5 to 6 at a 36-in. unit. Fewer valves and plumbing connections cut installation and maintenance costs.

Economy of water is another advantage. Several persons at a circular fountain use little more water than one at an individual basin. Each user washes in clean running water of regulated temperature. A foot or hand-controlled mechanism regulates the flow.

WASHING FACILITIES

No. persons	No. washing facilities
15	1
30	2
50	3
Each additional 25 persons	1

With circular fountains, 17 in. of outside rim equals 1 lavatory.

(ASA Code Z4.1-1955)

Semi-circular units 36- or 54-in. wide mounted against a wall are used for narrow or irregular washrooms.

Precast stone and marble are the most frequently used materials. Some models are also available in enameled iron and stainless steel.

Individual basin of vitreous china or enameled iron are satisfactory for comparatively small groups.

Mixing faucets are better than separate faucets for hot and cold water. Hot and cold handles should be plainly marked, with the hot water valve always on the left side. Thermostatic control of water temperature is desirable.

Faucets should permit washing in running water. Avoid stoppers.

Enameled troughs may be used

where first cost is a consideration. Over these are hot and cold water pipes with mixing faucets spaced not less than 24 in. apart. Double-width troughs, or single-width troughs back to back, save space.

Spray heads at basins or troughs should be high enough to permit washing head, arms, and shoulders under the spray.

Showers are needed in many industries, particularly where operations are hot or dirty, or where toxic materials are used. Requirements depend upon nature of the processes. They range from 1 shower for every 5 men to 1 for every 15.

Shower installations may be of the compartment or the circular multi-stall type.

Floors and approaches should be of slip-resistant materials, such as concrete with an abrasive surface. A curb 4 in. high should be erected around shower stalls, to keep water within the enclosure. With adequate slope to the drain a curb may not be necessary.

Painting the curb a contrasting color helps to prevent tripping.

Emergency showers. Quick-acting showers should be installed at convenient locations where caustics, acids, and other corrosives are handled.

Eye fountains are also desirable where chemicals are handled. Prompt flushing of the eyes is recognized as the best first-aid treatment for any chemical in the eyes.

Fungus infections. Warmth and moisture in shower rooms are conducive to the spread of fungi that cause "athlete's foot." Floors and stalls should be scrubbed daily with detergent and water as a general sanitation measure. A germicide in the scrub water is an added precaution.

Careful drying of the feet and use of an antiseptic foot powder help to prevent infection. Preparations for toughening the skin increase resistance to fungi.

Pans of antiseptic solution have been found ineffective or worse.

Disposable paper slippers or wooden clogs keep the feet from contact with the floor. They need not be worn in the stall where the floor area is kept mechanically clean by the flow of water.

Skin Cleansers

Four types of skin cleansers are in use: (1) Soaps (2) Sulfonated oils (3) Synthetic detergents and (4) Waterless cleansers.

Soaps. Powdered soaps consist principally of powdered hard soap and water softener, to which a scrubbing agent may be added. Cornmeal, a commonly used scrubber, may be coarse or fine. Most soaps can be used with hard water.

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Organic solvents, such as naphtha, turpentine, and carbon tetrachloride, should be avoided. Some, particularly carbon tet, are toxic, some are flammable, and all have a drastic defatting action. It they must be used to remove substances like lacquer that resist ordinary cleansers, emollient creams help to offset loss of natural skin oils.

There is less waste with powdered soap than with cake soap.

Liquid soaps are generally satisfactory where a scrubber is not desired. They are frequently used in office washrooms and in first-aid rooms.

With either powdered or liquid soap in suitable dispensers it is easier to keep fixtures clean than with cake soap.

Soap should contain no free alkali and should show a low pH in dilute solution. This can be determined before purchasing.

Sulfonated oils are useful for dry and soap-sensitive skins. They are frequently used where workers are exposed to the defatting action of petroleum oils and organic solvents.

Synthetic detergents of several types, mild but effective, are particularly useful for removing oil, wax and tar.

Waterless skin cleaners are effective in removing grease and grime and newer types can be tolerated by most skins. The earliest waterless cleanser in general use was kerosene—alone or emulsified with ammonia soaps. Subsequently odorless spirits and alkanolomines were used and now there is a variety of materials for the purpose.

Requirements include: Safety to hands; effectiveness of cleansing; absence of disagreeable odor; pleasant appearance and after-feel; suitable consistency for dispensing; rapid break when on the hands; and stability to heat, cold, and storage.

Portable dispensers with receptacles for waste towels can be set up quickly. No plumbing connection is needed. Dispensers for paper towels can be attached.

Waterless cleansers are not substitutes for soap and water but they are convenient and efficient for specific uses.

Germicidal cleansers. Ordinary soaps and synthetic detergents re-

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*American Pub. Health Assoc., Oct. 15, 1954



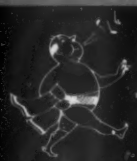
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CIRCLE 38 ON READER CARD

move transient bacteria from the surface but do not reach those embedded in the skin. Many germicides, such as phenol compounds, have been tested as ingredients of skin cleansers, but required concentrations that made them unsuitable for daily use.

Hexachlorophene, described by various trade names, has received wide medical approval. It is now used in soaps and detergents for medical, surgical, and deodorant purposes and for general industrial and home use.

Drying the Skin

Paper towels meet sanitary requirements and are economical and convenient. Dispensers should be kept filled and receptacles for used towels provided.

Recessed waste receptacles take one more object off the floor, improving the appearance of the washroom and making cleaning easier.

Mechanical hot air driers are acceptable from the hygienic standpoint. Popular types are foot-operated and may be of the pedestal type or recessed into the wall. Equipment should be well grounded and the electrical connection permanently installed without extension cords or plugs.

Towel services are used by some establishments, usually stores and offices. For industrial use, individual towels kept in lockers may not be changed often enough and they may come in contact wth soiled work clothes.

Toilets

Toilets should be partitioned off from washrooms and lockers. Partitions of enameled metal are at-

TOILET FACILITIES

No. persons	No. toilet bowls
1 to 9	1
1 to 9	1
10 to 24	2
25 to 49	3
50 to 74	4
75 to 100	5
Over 100	1 for each additional 30 persons

(ASA Code Z4.1-1955)

tractive in appearance and easy to keep clean.

Wall-hung equipment—lavatories, toilets, urinals and partitions—provides an unobstructed washroom floor. This permits rapid hosing down and mopping and eliminates corners that harbor dirt and make cleaning difficult.

Off-the-floor fixtures, of course, are not always practical, partciularly in modernization, where existing drainage lines must be used.

The oval-rim type of toilet with open-front plastic seat is most widely used. Foot-operated flush valves are favored by many.

The flushing mechanism should be rugged since employees often kick the handle instead of operating it by hand. Flush valves should be equipped with vacuum breakers to avoid back siphonage.

Toilets should be not more than 200 ft. from any work place; preferably less than 150 ft.

One toilet enclosure in each washroom should be reserved for the slop sink.

Urinals should be placed in convenient locations to avoid loss of time. One urinal for each 40 men is usually sufficient. Automatic flush valves use more water but are more effective in maintaining cleanliness since many persons seem reluctant to touch hand-operated valves.

Floors of toilet rooms should be of impervious materials, smooth and free from cracks. Tile and concrete are satisfactory. Floor drains permit frequent flushing.

Toilet rooms should have outside windows for light and ventilation if practicable. State or municipal regulations usually contain provisions for ventilation.

Switches for lights, electric driers or other equipment should be located so they cannot be operated by a person in contact with piping or other grounded conductor. Pull chains should contain an insulating link close to the fixture.

Cuspidors or sand urns should be provided where needed and cleaned at least daily. The disposable type requires less handling.

Lockers

A well-equipped locker room is an aid to orderly habits and occupational hygiene.

Locker rooms should be fire-resistant, separated by fire walls from the main building.

Exposure to toxic substances calls for extra precautions to prevent contaminated clothing leaving the plant. Separate lockers prevent contact between street and work clothes. They should preferably be in separate rooms with shower stalls between them.

Supervised washup periods and shower are needed wherever poisons are handled.

Sloping tops on lockers prevent use for storage. Dust is conspicuous and easier to remove than with flat tops.

Built-in lockers extending to the ceiling avoid dust-catching surfaces.

Lockers should be at least 4 in. off the floor to permit flushing the floor without wetting the contents of the lockers.

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CIRCLE 39 ON READER CARD

HYGIENIC AIR supplies may be obtained simply by opening a sufficient number of windows, or ventilation might involve complicated exhaust systems and controls of heat and humidity. Regardless, workers must have clean air for health, comfort, and safety.

Air pollution has become a problem for whole areas as well as for individual plants. In some regions, particularly those which are built up and where the topography does not permit quick dissipation of contaminated air, gases, dusts, and combustion by-products must be treated to make them safe and unobjectionable before venting to the outside.

Natural ventilation—air circulation through openings in walls unassisted by mechanical equipment—is satisfactory only when the building layout permits free circulation of air and where plant processes do not generate toxic or objectionable air contaminants.

Principles of ventilation. General ventilation systems are based on either of two general principles, or a combination of the two:

1. Plenum ventilation. Air is driven into the room by fans, diluting the room air with fresh air, forcing out stale air through doors, windows, and cracks. This method is limited to buildings where contaminants are non-toxic and present in low concentrations.

2. Exhaust (vacuum) systems. Air is drawn from a room by fans and is replaced by air entering through doors, widows, and other openings.

General Ventilation

Where processes are not injurious to health, general ventilation is usually satisfactory. It is also satisfactory where dilution of air contaminants will keep the concentration below Threshold Limit Values

Clean Air for Comfort

With a "plus" in health and safety

Heat and vapors from stencil-making are exhausted by hoods and ducts to the outside, while air-conditioning gear maintains constant humidity and temperature.



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(T.L.V.) for continuous exposure. Standards for many contaminants have been compiled by the American Standards Association and the American Conference of Governmental Industrial Hygienists has suggested T.L.V. values.

Where contaminants are toxic, removal at their source is necessary.

Ventilation is often complicated by the necessity of maintaining a comfortable temperature. Exhausting impure air is usually practicable but in cold weather it may be difficult and expensive to warm large volumes of incoming make-up air.

Natural ventilation is adequate for some buildings housing non-hazardous operations. Air circulation is aided by doors, windows, roof ventilators, and monitors. The number of outlets should be planned for hot weather when the temperature difference inducing the draft is at the lowest point.

Air intakes should be located so that incoming air becomes properly tempered before reaching work areas and does not cause uncomfortable drafts in cold weather.

Artificial general ventilation requires properly located inlets and outlets. Air coming into the room must be uncontaminated and discharge points should be located to avoid recirculation.

Contaminant heavier than air can be removed most effectively through openings at floor level.

Fans and blowers. Both portable and stationary types are useful for increasing circulation of air which affords relief from heat. They are not substitutes for exhaust ventilation where air contaminants must be removed.

For moving large volumes of air, blowing is more efficient than suction.

Devices for air circulation become less effective as temperature and humidity rise.

Caution should be used in air movement, particularly with velocities over 200 fpm. When relatively cool air is blown over workers at high velocity, objectionable drafts are created. On hot jobs "man-cooler" fans can be used to create air movement of considerably more than 200 fpm with no problem.

Control Measures

Where there is a definite source of air contamination, general ventilation alone is seldom sufficient. Control involves three steps:

1. Identifying the substance and locating its source.
2. Atmospheric sampling to determine nature and extent of contamination.
3. Engineering control measures.

Control at the source may involve one or more of these measures:

1. Isolation or enclosure of the hazardous operation.
2. Local exhaust ventilation.
3. Operational changes; substitution of process or materials.

Isolation confines the operation to a definite location. Exposure is either eliminated or restricted to a few selected, trained, and equipped operators.

Installations which combine exhaust ventilation with isolation and enclosure include: sandblasting rooms, shakeout and tumbling-barrel operations in foundries, dry mixing, and mixing of volatile liquids.

Processes creating excessive heat,



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CLEREX & H-R CREAM SOLVENT PROTECTION protect the skin against organic solvents. They wash off with soap and water. CLEREX is a gel which forms a continuous, strong, elastic skin-adherent film which does not interfere with tactile sensation. The film is insoluble in all anhydrous organic solvents, oils and greases. It protects against the hydrocarbons (benzene, benzol, toluene, gasoline, varsol turpentine, kerosene, solvent naphtha), the chlorinated hydrocarbons, nitriles and the polymerizable monomers (styrene, acrylonitrile, and unsaturated esters for producing polyester resins). Used in making and using paints, varnishes, plastics, polyester resin — fiber-glass compositions, lacquers, inks, and in metal degreasing using trichlorethylene. H-R CREAM is a modification of CLEREX with a vanishing cream base. It is highly resistant to the materials listed under CLEREX. It is useful where protection must be applied to the face and arms as well as the hands. It has proven highly effective against phenolic vapors, creosote, extreme exposure to coolants, tars, rubber-asphalt and rubber-tar mixtures, petroleum oils, plastic and adhesive compositions.

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CIRCLE 40 ON READER CARD

humidity, or noise should also be isolated wherever possible.

Letters on Coal Pile Praise Record



Letting the world know of its achievement of 2,000,000 safe man-hours are these six-foot-high lime-painted letters on the Edgemoor Power Station's 75,000-ton outdoor storage coal pile. Employees of this Delaware Power and Light Co. station lettered the announcement (visible from main building and passing aircraft) to signal eight and one-half disabling-injury-free years.

Local Exhaust Systems

Local exhaust systems are an important means of occupational disease control. Their purpose is to create a sufficient movement of air to withdraw contaminants at point of origin and convey them to a safe point for collection or disposal.

An exhaust system consists of four major parts:

1. Hoods or enclosures near source
2. Piping to connect hoods into system.
3. Collection equipment.
4. Fan or source of suction.

Dust is usually more difficult to control than gases, vapors, mists, and fumes. Dusty operations tend to project particles so that the hood must provide velocities sufficient to draw them into the exhaust system.

Exhaust hoods should enclose the process as completely as possible or the hood should be located to take advantage of the directional effects of the dust flow.

Dust-removal systems generally require higher air velocities and ducts of heavier gauge metal than those designed for gases.

Each part has its independent function but all must be designed to work together efficiently.

The exhaust hood is the most important part of the system. It should enclose the process as completely as possible. Air velocity decreases approximately with the square of the distance from the hood opening.

Air velocity for effective control varies with the process and material exhausted. Generally speaking, the better the enclosure and design of the hood, the lower the velocity needed.

Hoods or enclosures may be in the form of booths, canopies, lateral hoods, downdrafts through grill openings below the process, or slot-type hoods. The object is to remove the contaminant without drawing it through the breathing zone of the operators and with minimum interference with processing.

Hoods can be made more efficient by addition of flanges.

Ducts connect the hoods to the central fan. They should be designed so as to distribute the air flow in direct proportion to the requirements of each inlet, and maintain adequate pipe velocity to convey the contaminant to the point of discharge.

The system should be balanced so that each hood draws the proper amount of air. When this condition has been obtained, all means of adjustment should be permanently fixed. Areas of branch pipes and main ducts can be calculated to give correct air velocities throughout the system.

Material used for ducts must resist abrasive action of dust or corrosive effects of gases and vapors.

Sharp turns in ducts take extra power and cause a large pressure drop. In addition, any particulate matter in the air stream will collect where sharp changes in direction occur and eventually plug the duct.

Traps with clean-out gates should be provided at the bottom of vertical runs, and clean-out gates at regular intervals on the bottom side of horizontal runs.

Fans should have a capacity slightly higher than calculated requirements to allow for leakage in the system, accumulation of material on fan blades, and similar difficulties.

Where the contaminant is hot and has a natural tendency to rise and the operation can be provided with an effective enclosure type hood, natural draft ventilation is often satisfactory.

Portable ventilators are used for supplying fresh air to confined spaces for temporary work. Examples are tanks, tank cars, vats, underground cable manholes, pipe galleries, ship holds, and airplane wing compartments and fuselages.

Where objectionable fumes are produced, as in welding under some conditions, ventilators exhaust contaminated air.

Disposal of Contaminants

Equally as important as collecting the air contaminant is its disposal. Gases, vapors, and mists may often be discharged to the outside atmosphere at a point where they will not recirculate around the premises in harmful concentrations.

Dusts, both harmful and nuisance, require the use of dust collectors in the system.

Recirculation of air is generally undesirable, particularly when the

air has contained gas or fumes. Where only nuisance dusts are involved, recirculation after cleaning is often permissible.

Recirculation is not desirable when handling dusts containing such substances as lead, silica, and asbestos.

Air coming from the cleaning device must fall within the permissible range for toxic or flammable dusts.

Dust Collectors

Methods of removing dust from the air exhausted by the system include:

1. Filtration.
2. Electrostatic precipitation.
3. Dynamic precipitation.
4. Wet collectors.
5. Supersonic flocculation.

Filters are porous mediums through which dust-laden air is drawn. Some are designed to collect dust in the form of a layer on the upstream surface. This is characteristic of cloth and paper filters. Thicker types, such as those of metal mesh or glass fiber treated with oil, have greater dust-holding capacity but do not collect the finer particles:

A filter should have:

1. Low initial resistance to air flow.
2. Reasonable length of service.
3. Efficiency under changes of temperature and humidity.
4. Low flammability.
5. Reasonable replacement cost or ease of cleaning.
6. Low maintenance cost.
7. Freedom from odors.

Electrostatic precipitation is highly efficient—particularly for fine dusts which are difficult to remove by other methods. It offers low resistance to air flow. First cost and maintenance cost are relatively high.

Portable units are helpful in removing dust and smoke from small rooms.

Precipitators are less effective in collecting large particles moving with considerable force. For high concentrations of dust they generally require pre-cleaners. They are valuable when the process requires a practically dust-free atmosphere.

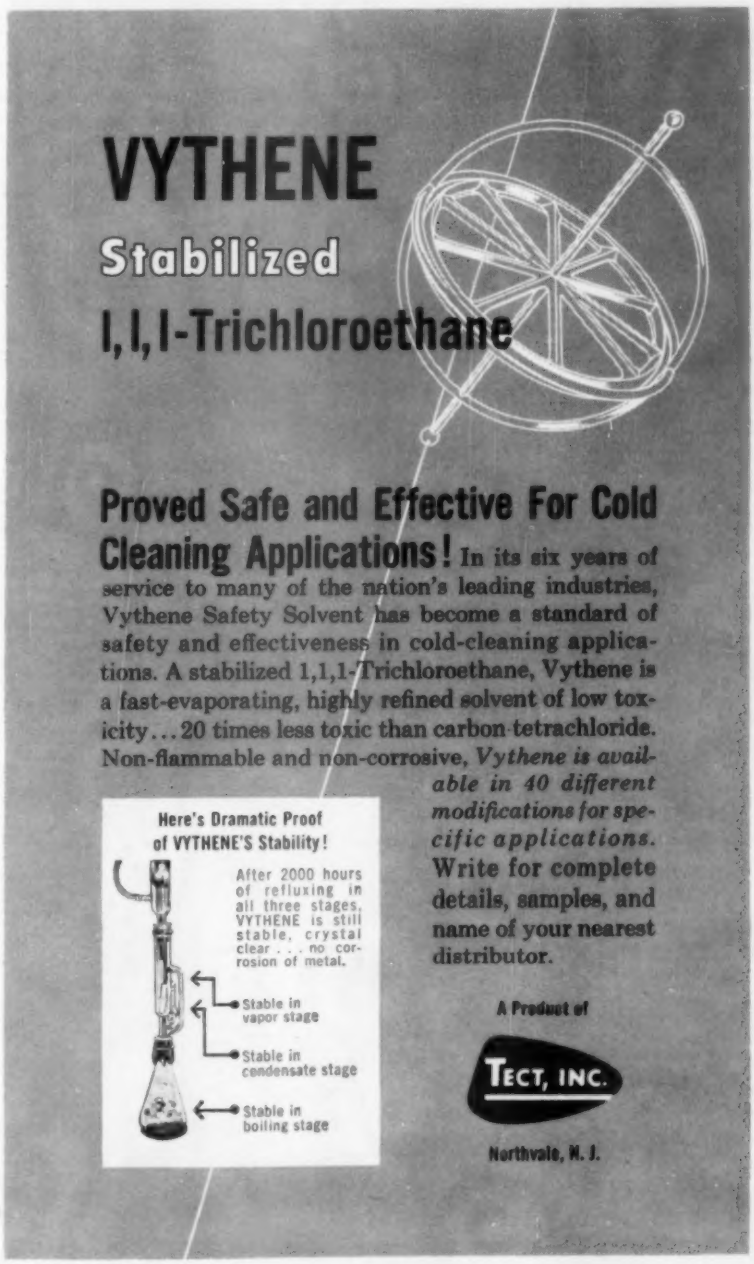
A combination of viscous filter and electrostatic precipitation with a self-cleaning feature is used on some models. It solves the problem of dust capacity and of heavy particles.

Cyclones. A cyclone consists of an outer cylinder fitted with an inverted cone-shaped hopper and an inner concentric cylinder which serves as a discharge duct. Air from the main duct of the exhaust system, under high velocity, enters the large chamber where the air is given a circular motion. The heavier particles are thrown to the outer wall by centrifugal force and fall along the wall. Air escapes through the top.

Cyclones are the most effective for large particles, such as sawdust, shavings, or heavy lint. After passing through them, air cannot be returned to the workroom without further filtering.

Multiple small diameter cyclones of small taper collect finer particles than the common large diameter ones, mostly because of higher velocities and greater centrifugal force.

Dynamic separators combine fan



CIRCLE 41 ON READER CARD

and collector in one unit. This type of separator is somewhat like the cyclone, but the centrifugal separating action is performed by the revolving blades. It is more efficient than the cyclone.

In some types water spray is introduced with the dust at the inlet. Wet collection increases efficiency for fine dusts.

Wet collectors use several devices for obtaining contact of water with the exhausted air so that dust particles form a sludge. One type consists of sprays or water curtains through which dust-laden air is drawn. These are efficient collectors.

An important application is in the prevention of dust explosions from grinding aluminum or magnesium.

Supersonic flocculation. Suspended dust is passed through a field of supersonic vibrations, inaudible to the human ear, generated by a high frequency siren. Vibration flocculates the fine particles, and the aggregates are then collected by cyclones or other measures for collecting relatively coarse particles.

General Measures

Personal protective equipment is needed where exposure is occasional or where complete protection is not practicable. Removal of the hazard at its source should remain the objective.

Sanitation and maintenance must receive constant attention to keep equipment at top effectiveness and prevent development of unhygienic conditions.

Supervision and training of employees, particularly in hazardous operations, are important.

Medical control is an important check on other methods. Engineering control is sometimes inadequate and symptoms of absorption of toxic materials by a worker may be the first real warning.

The safety department should be notified of the introduction of new materials and processes so possible hazards may be assessed and safeguards provided.

Workers exposed to toxic substances should have frequent physical examinations.



These employees use their coffee break to maintain bodily water balance each working day.

Keep Up Water Intake

ESPECIALLY IMPORTANT in hot weather, adequate bodily water intake is essential throughout the year in providing balanced elimination, perspiration, and breathing levels.

Resultant health, comfort and efficiency usually add up to a satisfactory safety record and efficient production.

Water must be cool and palatable. Facilities should be located conveniently.

Clean, attractive fixtures are also important.

In planning installations these factors should be considered:

1. Number of persons to be served.
2. Type of work—light or strenuous.
3. Temperature of surroundings.
4. Purity of water.
6. Design of fixtures.
7. Location of outlets.

Requirements. One outlet for every 50 persons is a recommended minimum for industrial establishments. More will be needed where temperatures are high or work involves considerable exertion.

It should not be necessary to walk more than 50 ft. for a drink. If outlets are too far apart, employees will not drink enough, or they will spend too much time away from work.

All rooms assigned for eating purposes should have a supply of drinking water. No drinking facilities should be installed in toilet rooms.

Water supply. Health departments maintain a close watch over municipal water supplies. But when the plant is located outside the city limits, and for temporary operations such as construction, public utility, and oil field work, the employer must supervise the water supply. It should be analyzed regularly.

If unapproved or "service" water is used for industrial processes or for fire protection, signs should be posted warning against its use for

drinking. Care must be taken to avoid possibility of cross connections between the two systems.

Sterilization. Water of questionable purity can be made safe for drinking by chlorination or boiling. Compounds for sterilizing water, some in convenient tablet form, are available.

Filtration is desirable for removal of sediment but it will not destroy harmful bacteria.

Temperature of water. For workers who perform heavy manual labor, from 50 to 55 F is recommended. For office workers, restaurant patrons and others who are less active, the temperature may be as low as 45 degrees.

Methods of Dispensing

Accepted methods of dispensing drinking water are:

1. Disposable paper cups provided at outlet.
2. Fountains of approved design.

Paper cups should be kept in dust-proof containers and receptacles provided for used cups. Containers must be kept filled or workers will salvage old cups.

Drinking fountains should conform to specifications of the *ASA Code Z4.2.* Important features are:
–An angle jet, which prevents the water falling back on the nozzle.
–A guard to keep the user's lips away from nozzle.

Older installations in factories, offices, stores, and public buildings which do not conform to hygienic standards can often be modernized at reasonable cost.

Line strainers and pressure regulators are desirable accessories for drinking fountains. An outlet for filling glasses is also useful, particularly for office use.

Each cooler may be a unit in itself or a central compressor may serve several outlets.

Hazardous locations. For use where flammable gases, vapors, and dusts may be found, explosion-proof fountains are available.

Maintenance. Regular cleaning of porcelain and metal keeps fixtures attractive and sanitary.

A cuspidor or sand urn should be provided at each fountain to receive trash such as discarded chewing gum and cigaret butts.

Salt tablets. A dispenser should be located at each drinking fountain.

Isolated Jobs

For jobs remote from city water mains such as construction work, public utilities and railroad maintenance, mining, and other isolated working places, there are safe and convenient methods for providing drinking water. It is not necessary to depend on an open bucket with one cup for the whole crew.

Insulated coolers, with dispensers for paper cups are frequently used. The container should have a tight-fitting cover. Ice should not come in contact with the water.

Vacuum bottles for individual use may be provided for remote or hard-to-reach places, such as crane cabs.



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A pair of dirty hands with free access to an open can of soap may well be the reason your company handcleaning bill is such a costly item. Provide an effective way of controlling the amount of soap being wasted by your employees, and you'll prevent the greatest part of your handcleaning dollar from being washed down the drain.



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Designed to eliminate waste, the Go-Jo Heavy Duty Dispenser delivers just the right amount of Go-Jo to get even the grimiest hands spotlessly clean. Go-Jo Creme Hand Cleaner is a concentrated formula containing GT-7 for dermatitis protection, plus soothing emollients to prevent chapping. When used in the Heavy Duty Dispenser, it provides four times as many clean-ups as "hand-scoop" methods.

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Defeat Heat!

Before it gets you

EXCESSIVE HEAT and humidity often cause increased accident rates through lessened alertness, greater discomfort, and lowered productive efficiency on the part of workers.

Seasonal heat and cold hazards are found in constuction work, public utility, highway and railroad maintenance and farming. And complicated, serious year-long exposures to heat and humidity are found in glass plants, foundries, boiler rooms and steel mills.

Above 90 degrees, the body rapidly loses its ability to compensate for atmospheric conditions. The effects of heat are intensified by high humidity and lack of air movement.

Some persons, of course, can stand more heat than others, but it is good operating practice and good employee relations to keep the working spaces as cool as possible in summer and to shield workers from heat generating processes.

Air-conditioned comfort is not yet practical for many industries but other measures will often help. Ventilation comes first. Another method often used with flat-roofed buildings is to keep the roof sprayed with water. For operations where there is radiated heat, shields and insulation may be used.

Ventilation. Keeping air in circulation by general mechanical ventilation is helpful, and spot cooling by fans often increases comfort. However, when the wet bulb temperature of the surrounding air is higher than that of the body, blowing air over the worker makes him feel even more uncomfortable.

In industries such as hot mines, glass plants, and steel mills where heat is excessive, it is frequently useless to blow air over workers unless it is cooled and dehumidified.

Radiated heat. In some operations workroom temperatures cannot be kept below recommended limits. Radiation from hot objects presents difficulties in control. Radiated heat can be decreased by shields or insulation where fans would not be effective.

Adequate washroom facilities and plenty of cool, pure drinking water also help offset the effects of hot surroundings.

Work clothing. For a hot, humid environment, clothing should be porous, light in weight, and allow air to circulate around the body.



Here's one worker who fights the battle of heat with balanced moisture intake.

For exposure to local sources of intense heat and infrared and ultraviolet radiation, special protective garments are needed. (See Sec. 6).

Acute Ailments

Exposure to extreme heat, especially when accompanied by physical exertion, may result in heat cramps, heat exhaustion, or heat stroke.

Correct first-aid treatment for each type of ailment is important. All cases should receive prompt medical attention.

In general, the same precautions will help to prevent or minimize all types of disability due to heat.

Heat cramps are due to excessive loss of salt and moisture from the body. They come suddenly and may involve skeletal or intestinal muscles. Even if lost body moisture is replaced by drinking plenty of water, loss of salt may cause heat cramps.

Heat cramps are relieved in a few hours by proper treatment but soreness may persist for several days.

Heat exhaustion is a shock-like state also resulting from loss of salt and fluid. Symptoms are pallor, relatively low temperature, weak pulse, a feeling of restlessness or anxiety, and sometimes unconsciousness. It is much more serious than heat cramps and is occasionally fatal.

A person with either heat cramps or heat exhaustion should be given salted water, if conscious, and put under medical care as quickly as possible.

Heatstroke (or sunstroke) is caused by exposure to an environment in which the body is unable to cool itself sufficiently – not necessarily exposure to the sun. Body temperature rises and the heat-regulating mechanism breaks down.

Symptoms are severe headaches, flushed face, high temperature, visual disturbances, and loss of consciousness. If prompt treatment is available the patient has a good chance of recovery; otherwise death may occur within a few hours. One of the after effects is inability to withstand heat.

Sunburn can be painful and dangerous. In strong sunlight, the head should be covered and exposure of the skin kept at minimum. Tan should be acquired gradually. Treatment is the same as for any other type of burn.

Use of Salt

Maintaining the salt in the body at an adequate level enables men to work at strenuous occupations where temperatures are unavoidably high.

For sedentary workers, normal use of salt with food may be sufficient. However, those whose jobs require greater physical exertion may not consume enough by this method.

Dispensing. The most convenient and popular method for providing salt is in tablet form. The 10-grain size is more frequently used. Five types of salt tablets are available:

1. Plain.
2. Enteric coated. These pass through the stomach intact and dissolve in the intestines. They can be used by persons with sensitive stomachs.
3. Impregnated. A network of in-

ert material within the tablet prevents nausea by slowing down dissolution.

4. Combination. Contains 70% salt and 30% dextrose.

5. Enteric coated combinations. Enteric coating over 30% dextrose tablets.

In plants where supplemental salt intake is indicated, a dispenser for salt tablets may be placed beside the drinking fountain. Dispensers are made in several styles and sizes.

Caution. Persons with kidney or heart disease or high blood pressure should not use salt without medical approval, and should not be placed on jobs where they would be exposed to high temperatures or heavy manual work.

Diabetics should be warned against tablets containing dextrose and plain tablets should be provided for them.

Water is as important as salt. A full glass of water (8 oz.) should be taken with each tablet.

Salt is sometimes added to the water where drinking water is not used in the industrial processes. Salt tablets may be provided in convenient pocket packages for those whose work takes them away from the plant.

Air Conditioning Makes Climate to Order

To provide a comfortable working environment, it is essential to cool and dehumidify workroom air in summer and to heat and humidify it in winter. This involves control of temperature and humidity, air motion and contaminants, the process called air conditioning.

In industrial plants, temperature and humidity usually are influenced by the product's requirements, which may not coincide with the most comfortable conditions for persons.

More attention is being given to summer comfort and the possibility of raising human efficiency, which slumps seriously as temperature and humidity rise.

Temperature in the workroom should not be much lower than that outdoors – not much more than 10 degrees difference between interiors of buildings of public occupancy and the outside.

Coolers for Hot Jobs

Operators of overhead traveling cranes often are subjected to extreme heat and humidity, as well as to gases, vapors, and dusts from operations below.

Cab coolers designed to improve conditions on such jobs are self-contained units that need only an electrical connection. They supply clean air, cooled and dehumidified, to the cab.

Locomotive cranes, which often operate in hot locations, can be provided with similar equipment. It can also be used to heat the cab in cold weather.

For pulpits and other control locations in steel mills where heat, dirt, or fumes create uncomfortable and hazardous conditions, similar equipment has been designed.

Salted drinking water should be used only under medical supervision.

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The world's finest skin cleanser + **a dispenser for every need** = **health and convenience for your employees**

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96 fluid oz. portable dispenser for bench work, portable work carts, outside service trucks, oil rigs, work shops, etc.

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You offer your employees:
Clean hands and face, free from dirt, grime and germs.

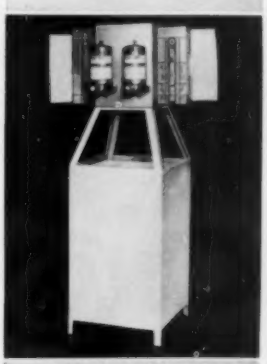
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No. 50 Vi-Lan Dispenser
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CIRCLE 43 ON READER CARD

Are Your Solvents Safe?

Better not take a chance. Check them!

ORGANIC SOLVENTS have found widespread use in many industries for dissolving pigments, glues, plastics, and other materials. These applications and the flammability or toxicity of most organic solvents make them a definite safety problem.

In selecting solvents to do specific jobs with minimum hazards, at least four safety measures are recommended: adequate ventilation, satisfactory personal protective equipment, facilities for personal cleanliness, and access to medical supervision.

Animal and vegetable fats are readily dissolved by alkalis which combine with fats to form soap, which is washed away with water.

Soil often combines dust, tars, and gums which are most easily dissolved by organic solvents.

Emulsion cleaners have to be used with water, which limits their use. Straight solvents are needed where water cannot be used, as on electrical equipment.

Organic solvents are those which contain the element carbon, and no metallic or basic element. They are classified in four main groups:

1. Hydrocarbons.
2. Alcohols.
3. Esters and ketones.
4. Chlorinated solvents.

In addition to solvent power, other properties may be important to the user. Flash point, toxicity, speed of evaporation, and cost must also be considered.

Properties of solvents. From the standpoint of safety the two most important properties are the flash point and the maximum allowable concentration.

Flash points given in most tables are determined by the closed cup method. These are always lower than those determined in an open cup.

Toxicity is measured by "maximum acceptable concentration" (MAC) in parts per million (ppm) of solvent that can contaminate the air in a room for extended periods without endangering the occupants. This term and "threshold limit value" are used interchangeably. The higher the MAC, the lower the toxicity of the solvent.

Speed of evaporation is also an important factor in toxicity. In addition to the rated MAC, the time it takes to reach that concentration must also be considered. A solvent of low volatility is generally less hazardous than one of high volatility with the same MAC.

Many efficient solvents are not safe for general use. Carbon tetrachloride, for example, is nonflammable but its fumes are highly poisonous. Benzol is too toxic and too flammable for general use.



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Protect Your Skin

With these suggestions

SKIN DISEASES rarely cause death but are frequently hard to cure and bring much discomfort. Financially, they account for about 60 per cent of all compensation claims for occupational diseases.

Often substances normally harmless will cause irritations of varying severity in some skins.

Cause of occupational skin diseases are classified under five main headings:

1. Mechanical agents—friction, pressure, trauma.
2. Physical agents—heat, cold, radiation.
3. Chemical agents—organic and inorganic, subdivided according to their action on the skin as primary irritants and sensitizers.
4. Plant poisons—several hundred plants and woods can cause dermatitis; best known is poison ivy.
5. Biological agents—bacterial, fungus, parasitic.

Cutting Fluids

Cutting fluids are frequently involved in occupational acne. The condition starts with irritation of the skin by continual contact with the oil, forming comedones or blackheads. These comedones later become infected to form oil pimples or boils which resemble adolescent acne.

Careless workers contacting dirty oil is a combination that often results in occupational acne. Some types of skin are more susceptible than others, but anyone will develop oil acne with sufficient exposure.

If precautions are taken, oil acne can be prevented.

Machines and the area around them should be kept clean.

Oil should be changed and the machine thoroughly cleaned after about 120 hours of use. Oil may be reclaimed or replaced, depending on which is cheaper.

Reclaimed oil may be sterilized by heat during the process. Caution should be used in adding germicides. Most of them are irritants if permitted to become concentrated.

Oil dermatitis may occur on any portion of the body but most often where oil-soaked clothing rubs the skin. Hands, forearms and wrists are commonly affected.

Men should be encouraged to bathe at the end of the shift. A shower with warm water, mild soap or detergent, and a soft brush is helpful in the control of oil acne.

Predisposing factors. In investigating causes of skin disorders, consider:

1. Degree of perspiration.
2. Personal habits of cleanliness.
3. Pre-existence of skin disorders and allergic states.
4. Diet.

General Precautions

The following are useful in preventing occupational skin diseases:

Maintain good housekeeping around processes.

Provide appropriate personal protective equipment (gloves, aprons, face shields, protective creams).

SPEAKMAN
LIFESAVER emergency shower

Instantly floods worker under a rinsing deluge... drowns flames, washes off acids, chemicals and fumes



Accidents can slip through even the finest safety program. You protect your workers from these inevitable emergencies when you equip your plant or laboratory with Speakman LIFESAVER emergency showers. Carefully inspected and tested under water pressure, they assure durable, reliable performance under the hardest use. For indoors and outdoors.

Speakman Safety Showers and Fixtures are available in many types, sizes and combinations. For complete descriptions, write to ask for Safety Booklet S-88-A.



S-2075 Speakman LIFESAVER emergency shower. Size 1 inch. 8-inch cast brass self-cleaning shower head with adjustable face. Discharges 29 gallons per minute at only 30 lbs. pressure.

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CIRCLE 45 ON READER CARD

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• Combat heat fatigue • Help employees feel good and retain full vigor • Reduce hot weather accidents.

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IMPREGNATED SALT TABLETS



in new, sanitary "throw-away" dispensers for indoor or outdoor use!

IN SIZES OF 500 or 1000 TABLETS



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INDUSTRIAL OPERATIONS, revolving around the plant, farm, and sometimes the home, often find rodents a serious problem. Carrying disease and bringing about loss of products, rats, mice, and insects consume or make useless many millions of dollars worth of food and goods annually.

An effective program of rodent control has these three parts:

1. *Sanitation* – taking away food and shelter.
2. *Ratproofing*–building him out of places where he can get food and cover.
3. *Reduction*–by various methods of killing. Without the other two methods, reduction can be only temporary.

Rodents cannot survive without food, water, and shelter. This makes good housekeeping vital for factory, home, and farm – indoors and out.

Scraps from the kitchen and from employees' lunches should be placed in covered metal containers. Spilled grain or other edible materials should be swept up daily.

Ratproof construction helps to keep them out of a building. Concrete, bricks, and metals of 24-gauge or heavier are effective. Hardware cloth screens for rats should have not more than ½-in. openings – ¼-in. for mice.

Material stored on the ground provides shelter. Rodents will have difficulty getting established if material is stored on racks 18 in. above ground.

Extermination. Traps, gases, and poisons are useful methods of keeping down the rodent population in conjunction with other sanitary control measures. Natural enemies, such as dogs, cats, ferrets, snakes and hawks, are not dependable and some of them, obviously, are not desirable pets.

Many types of traps have been devised but the baited wooden snap-trap is still widely used.

Poisons. Red squill has long been a popular and effective rat killer.



"I've told Helen a dozen times to stop putting bananas in my lunch."

It acts as an emetic on other animals but rats and mice cannot vomit and death results.

Warfarin is also relatively harmless to most other animals and to human beings. It is used in establishments handling food products where more toxic substances could not be used safely.

More powerful poisons, such as thallium sulfate and sodium fluoroacetate (1080) are not for amateur use.

Many other rodent killers introduced in recent years have been discarded because they had too many disadvantages.

Fumigation. Fumigant gases should not be used indoors by non-professionals. Carbon monoxide can be used in outdoor places. A hose attached to an automobile exhaust is put down the burrow.

Chloropicrin has the advantage of being repellent. A heavy application is said to make a burrow uninhabitable for several months.

Calcium cyanide can be applied to burrows with a foot pump. It should not be used indoors where there may not be enough moisture to liberate cyanide, thus creating a delayed hazard. The gas is lighter than air and outdoors it dissipates rapidly. It has a warning odor.

Methyl bromide, an effective gas,

should be used only by professional exterminators.

Insecticides. Wherever food is grown or processed, a constant fight must be waged against insects. For farm and garden the traditional poisons such as lead arsenate, Paris green and nicotine sulphate have been supplemented by much safer products, such as rotenone, pyrethrum, and DDT.

No insecticide, however, should be considered harmless. The user should avoid inhaling dust or spray of any kind and allowing any of it to remain on the skin. For extensive use, protective clothing, gloves, and a respirator may be desirable.

Lethal fumigant gases are used for exterminating weevils, moths, beetles, and other insects. Carbon disulfide is effective for controlling weevils in grain but it is highly toxic and highly flammable.

Fumigation should be done only by licensed fumigators.

Storage of Pesticides. One person should be assigned responsibility for handling and storage. Containers and sprayers should be painted a distinctive color, with contents, uses, and hazards plainly marked. These materials should be kept under lock and key and used only by trained and supervised employees.

When Chemicals Hit Human Skin

There are two general types of chemical action on the skin:

1. Primary irritation dermatitis. Practically all persons suffer skin irritations from acids, alkalis, irritant gases, and vapors, and from physical agents, such as heat, cold, and friction. Brief contact with a concentrated primary irritant or prolonged exposure to a lower concentration results in inflammation.

Allergy is not a factor in these conditions.

2. Sensitization dermatitis is the result of an allergic reaction to a given substance. Once sensitization develops, even small amounts of the material may cause symptoms.

Some substances can produce both types of dermatitis. Among them are organic solvents, formaldehyde, and chromic acid.

CIRCLE 47 ON READER CARD



1 ST CHOICE FOR DUST FREE PRODUCTION

We must admit we're stretching it a bit when we picture this unit in a desert dust storm. Actually, this is a stock dust-free enclosure of stainless steel, designed to be assembled with counter parts for production line industrial use and can easily function perfectly under such conditions.

We are a division of Kewaunee Manufacturing Co., specializing in engineering and production of highly technical equipment and apparatus for research and industry. Our experience and facilities qualify us to custom design and manufacture, or assemble from stock, any of the following types of enclosures: glove, vacuum and dry boxes; dust free enclosures; and controlled atmosphere systems.

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CLEAN-O-MATICS are built so rugged . . . and so dependable, the pump and tank carry a 5-year warranty.

SOLD BY LEADING INDUSTRIAL DISTRIBUTORS . . . FROM COAST TO COAST!

- **AUTOMATIC SAFETY COVER** with fusible link to reduce fire hazard. Self setting with thumb release. Can be operated with one hand from front of unit.
- **SANITARY—EASY TO CLEAN** . . . Solvent filter located above liquid level. Replaceable filter cartridge. Removable sludge trays. Tank drain
- **NO-FATIGUE WORKING HEIGHT.** Unit uses cold solvents. Eliminates toxic vapors. No heating or rusting.
- **3-WAY CLEANING ACTION** . . . jet-spray pistol-grip nozzle, steady flow metal flush hose and hydraulic or air agitated soak tanks.

. . . plus many more. Write for complete catalog on 4 low cost models. Also safety solvents and safety soak tanks.

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Clean it easier, faster and better . . . with a CLEAN-O-MATIC

CIRCLE 48 ON READER CARD

CIRCLE 49 ON READER CARD



Leading industrial doctors advise immediate washing with plenty of running water as the best first aid treatment for any chemical in the eyes. Records prove that washing with water for ten minutes or more, close to the accident, is necessary to reduce or eliminate eye damage.

Forehead operation leaves hands free to open eyelids so water can be directed wherever chemicals might be lodged. Sanitary white baked enamel bowl is resistant to most fumes.

Over 500 industrial plant installations have been made to date.

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VALVE
Chain Operated
Quick Action
Self-Closing

NEW EMERGENCY SHOWER



The B & A Shower is the quickest and most satisfactory way to saturate a worker with gallons of water the instant an accident occurs, to prevent a disfiguring burn—even a fatality

Special shower head, no holes to clog—can be used where unfiltered water prevails.

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NEW LOW COST B & A SAF-T-BAGS



are widely used for the safe handling of glass bottles containing harmful chemicals; also the storage and recovery of expensive serums, biologicals, and other costly products.

Painful cuts, disfiguring burns, loss of eyesight, or even a fatality, do result from corrosive liquid splash and flying glass when unprotected bottles shatter.

5 PINT
1 GALLON
5 GALLON

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BENSON & ASSOCIATES, INC.

Eating Can Be Automatic

Whether from vending machine or caterer

WORKERS in a good many plants in this country now are able to step up to vending machines and obtain food ranging from canned products to hot coffee, soft drinks and milk. Or employees may prefer to go to company cafeterias serving entire meals.

Plants with fewer than 250 employees represent nearly 96 per cent of the country's manufacturing establishments. Vending machines and disposable paper utensils have made it possible for many small concerns to provide food service.

Many companies set up lunchrooms and cafeterias because nearby restaurants are unable to handle peak crowds during the lunch hour and much time would be lost going to and from the job.

Types of Service

There are five main types of food service for industry.

1. Cafeterias preparing and serving hot meals.
2. Canteens or lunchrooms dispensing sandwiches and other packaged goods and hot and cold beverages. A few hot foods may be served.
3. Mobile canteens which circulate through the plant. Hot and cold foods and beverages are carried in vacuum containers.
4. Box lunch service.
5. Vending machines.

Vending machines dispense anything that can be packaged – soup, stew, chili, french fried potatoes, sandwiches, pastry, fresh fruit, and hot and cold beverages.

Modern machines are efficient in keeping foods hot and compact refrigeration units have been developed to chill foods. Disposable containers and electronic cooking on the spot have also expanded automatic service.

Vending machines are serviced by the companies installing them, relieving the employer of the responsibility of operation.

Few companies expect to make a profit from the service. The usual arrangement is to receive a percentage of the gross receipts which is turned over to employee recreation and benefit funds.

Disposable paper utensils for frozen or for hot foods have simplified food service. They eliminate dishwashing and breakage and make it possible to operate with a smaller staff.

Foam plastic cups provide insulation from hot beverages. Being seamless, the hazard of a scalded hand when a seam fails is eliminated. The foam plastic has practically no taste.

Some plastic lined paper cups have been known to ignite if a lighted cigarette is touched to them. Disposable utensils should be tested before ordering.

Vacuum insulated containers make it possible to carry hot foods prepared in a central kitchen to lunchrooms some distance away. This equipment is used by some large plants with scattered lunchrooms as well as by caterers.

Employees who bring lunches from home or buy box lunches may eat in locker rooms, if clean and well ventilated, or in work areas where processes do not make it undesirable or dangerous.

Management. Many companies have turned cafeteria and canteen operation over to caterers. Some large companies, however, do not like the idea of assigning management of the service to outsiders. If employees do not like the food or the prices the company, not the caterer, gets the blame. So they provide professionally managed plant cafeterias supervised by the personnel department.

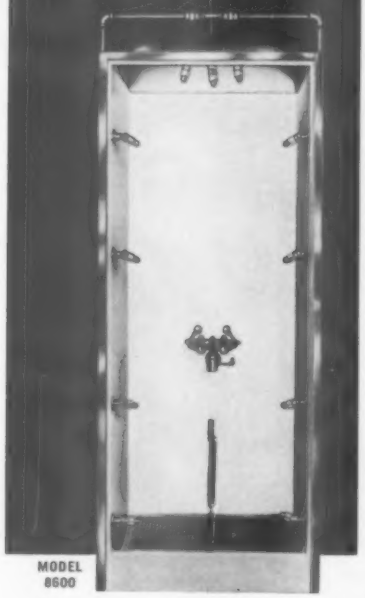
For smaller companies, an industrial caterer is often the only practicable way. Foods are prepared in a central kitchen and transported to the plant. This avoids investment in kitchen space and equipment and maintaining the necessary staff. The employer provides the eating space and dishwashing facilities. Dishwashing is kept at a minimum by disposable utensils.

CIRCLE 50 ON READER CARD



Volatile chemicals and propellants can cause serious accidents—but serious injuries need not result if water irrigation is immediately available! Haws Decontamination Booth provides the "cloudburst" that rapidly rids the body of harmful irritants. Victims walk on the foot treadle and are instantly bathed in water from a dozen nozzles. Haws Eye-Face Wash is simultaneously activated—a pressure controlled unit with a perforated face-spray ring and twin eye-wash heads. Booth is acid resisting fiberglass plastic, and is delivered complete, ready for tie-in to existing facilities. Write for details on the full line of models.

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MODEL
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Control Air-Borne Bacteria

Control of air-borne bacteria is sometimes required by manufacturing processes, as well as for health reasons.

Ultraviolet radiation and chemical bactericides will destroy bacteria, but practical methods of application impose numerous difficulties.

Ultraviolet radiation, using low-pressure mercury lamps with ultraviolet transmitting glass or quartz envelopes will destroy many micro-organisms.

Application is by irradiating the upper air stratum of a room, beaming or screening to provide a narrow barrier of protective light, or inserting a radiation source in an air duct.

Radiations of sufficient intensity to kill bacteria are injurious to eyes and skin. Lamps should not be in the range of vision.

Germicidal lamps must be used in fixtures designed for them. When used in ordinary lighting fixtures they will not function effectively and invisible ultraviolet energy generated by them can be harmful. Lamp wrappers warn purchasers not to look at lighted lamps.

Chemical bactericides. Propylene glycol is effective under most conditions. Effective concentrations are odorless and non-toxic to humans.

Their use requires close control of humidity.



"Knock it off! No air conditioning!"

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What does it take to protect everyone who uses your shower rooms against Athlete's Foot? It takes the unique advantages only SANI-MIST provides—

- **Maximum protection** against Athlete's Foot—with individual, undiluted applications of SANI-MIST solution—in just 30 seconds.
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The low-cost SANI-MIST method is used in thousands of industrial plants, schools and country clubs. Use the coupon below to find out what it can do for you:

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CIRCLE 52 ON READER CARD

MEDICALLY APPROVED

HAND CREAMS



For INDUSTRIAL WORKERS

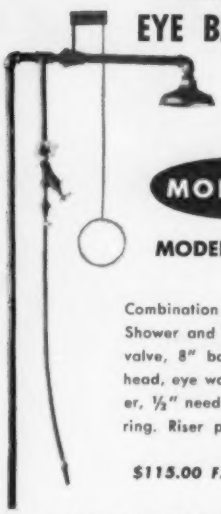
PH7 PROTECTIVE CREAM is non-greasy, non-irritating and non-sensitizing to the skin. By applying one application before starting work PH7 will guard hands up to four hours against lubricating oils, cutting compounds, synthetic resins, solvents, inks, paint, fiber glass, iron dust and chlorinated naphthalene.

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These two creams work hand-in-hand to protect skin . . . Write today for full details. Free test samples on request.

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CIRCLE 53 ON READER CARD

Closed-Circuit TV Spots Sewer Leaks

And heads off potential pollution problems

TV cameras and receivers are helping Pacific Northwest sewer inspectors to check new construction and make minor repairs. Lee Hoffman, Inc., of Portland, Ore., has used TV techniques recently in Oak Lodge Sanitary District No. 1 near Milwaukee, Ore.

The firm's traditional methods of inspection in newly laid sewer sections involved filling the line with water under pressure. Workers made repairs by opening the ditch to find the exact location of the leak, then holding back soft earth with shoring while plugging holes in the pipe.

Mobile TV cameras and receivers enable inspectors to find pipe leaks without entering the line. Areas to be repaired can be pinpointed within several inches. For minor corrections Hoffman employees drill two holes beside the pipe and inject commercial soil solidifier to harden the ground around the leak.

To find these trouble spots, the mobile truck and TV gear are set up near a manhole. Air under pressure blows a plastic parachute with a nylon mason line attached through the section to be inspected. The line is retrieved at a chosen distance down the section.

Workers hand-winch the camera and TV conductor cable down the pipe. The winch has a footage meter to indicate the position of the camera in the pipe.

When a defect appears on the screen, the winch operator is notified by two-way phone to stop winching. Workers take a photo of the image on the TV screen for the record, later inspection and repair.





Above: worker hand-winches camera and TV conductor cable down pipe. Below: arrow shows pipe defect on TV screen, providing subject for photo record, inspection repair.



SECTION 4

NOISE CONTROL

IN SECTION 4:

Noise — Is It a REAL Problem?
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Hearing Can Be Helped ..102

Noise—Is It a REAL Problem?

By FLOYD E. FRAZIER



Floyd E. Frazier is director of noise research for the National Association of Mutual Casualty Companies. Trained as a mechanical engineer, he has devoted more than 25 years to industrial health and accident problems. He has worked for the National Safety Council, National Surety Corporation, and the Zurich Insurance Companies. Mr. Frazier has written extensively on the subject of noise and has served as consultant on occupational loss of hearing to numerous groups. He is a member of the Technical Committee on Noise in Industry, Associated Industries of New York State; Noise Control Committee, American Foundrymens Society; Acoustical Standards Board, ASA; American Industrial Hygiene Association; and Acoustical Society of America.

NOISE CONTROL is a relatively new problem in industry. But noise and its objectionable qualities are not new. Noise has always been with us in some degree in industry and elsewhere, and has been regarded primarily as an unavoidable nuisance. What is new is general recognition of its possible effect upon the hearing of industry's workers under certain conditions of exposure, and its adverse effects upon safe and efficient operations.

Many exaggerated claims have been made concerning the physiological effects of noise, including even death and sterility. Most of these claims are without foundation. In noise exposures ordinarily encountered in industry the possibility of damage to hearing is the only health hazard established.

It is probable that about one-half the population enters adult life with less than normal hearing acuity. This is because normal hearing is not a fixed point to which every individual can be expected to conform. It represents a statistical average from a survey of young people in which individuals tested varied plus or minus 15 decibels. Deviations of up to 15 decibels are considered within the range of normal variability.



Additional hearing losses result from many causes unrelated to the occupation, including age, and individuals vary in susceptibility to noise damage. This should not obscure the fact that workers exposed to intense noise for extended periods tend to develop greater losses than found in the general population.

Few will doubt that noise creates communication difficulties which contribute to accidents and reduce efficiency. Regulations are appearing, governing permissible noise levels in the plant and in the surrounding community. Some states have provided for payment of compensation benefits to workers for loss of hearing due to industrial noise. Only through effective noise control and hearing conservation programs can industry hope to eliminate its environment from the chain of causal events.

Problems of noise control are not unsolvable. Basically they involve two approaches. The first and most desirable is to eliminate or reduce the noise by application of established engineering principles. Where this is impractical, the alternative is to protect the worker. There are relatively few industrial exposures where adequate protection cannot be provided by use of available ear protectors.

Noise control is an essential part of the over-all health and safety program.

IAC Your Standard of Silence

Sounding Board

News of Interest in the Field of Noise Control

Your Hearing Conservation Program Begins With an Accurate Analysis of Noise-Exposure

Because prolonged exposure to harmful noises cause early-induced hearing loss which is not easily discernible, the accurate analysis of these noises is a vital part of a proper Hearing Conservation Program.

Accurate Sound Analyzer Necessary

The measurement of noise and its analysis, (the breakdown of noise into its various frequencies), calls for precision instruments and techniques. To make the function of noise measurement and analysis easy for non-technicians, the Rudmose Instrument Co. has designed a new combination sound level meter and analyzer which furnishes accurate sound level measurements and octave analysis with a simplicity of operation making it virtually impossible to obtain incorrect readings.

Also Calibrates Audiometers

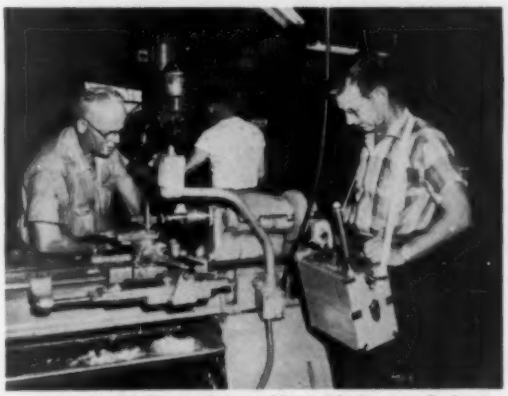
As hearing tests are the most important part of a hearing conservation program, the audiometer output must be checked routinely for accuracy of calibration. The Rudmose R.A. #100 Sound Analyzer is equipped with an earphone coupler for checking the audiometer's accuracy of calibration. Circle 65.

Audiometers and Audiometric Rooms, Too

The Rudmose R.A. #100 Sound Analyzer is an addition to the equipment distributed by Industrial Acoustics Company, Inc., for instituting a complete and effective Hearing Conservation Program. The Rudmose Automatic Audiometer is available for rapid and accurate hearing tests; and IAC Audiometric Examination Rooms for providing a proper environment for obtaining accurate audiograms. Circle 66.

Control of Noise a Factor

Another important part of any Hearing Conservation Program is the control of noise at its source. This is accomplished by the use of IAC complete or partial noisy machinery enclosures or by protecting personnel with IAC "Quiet Rooms" to shield workers from damaging noise. Circle 67.



Measuring noise level of a machine with the new Rudmose #100 Sound Analyzer. The lightweight, completely transistorized unit is convenient for carrying.



R.A. #100 Sound Analyzer being used to check audiometer. The earphone coupler transmits audiometer signals into microphone for checking.



Using the Rudmose Automatic Audiometer, subject conducts his own hearing test seated within an IAC Audiometric Examination Room.



An IAC machinery enclosure controls noise levels by isolating noisy equipment.

"STEEL CLAD" TELEPHONE BOOTHS KEEP NOISE OUT-CONVERSATION IN



Wall Model "NOISHIELD" Telephone Booth installed in a machine shop.

IAC "NOISHIELD" telephone booths are engineered for high acoustic efficiency to provide ease of conversation in noisy locations or privacy of conversation where desired.

Featuring rugged steel-clad construction, attractive finishes and low cost, these booths are ideal for factories, public buildings, terminals, schools, laboratories, restaurants, stores and for all noisy locations. IAC "NOISHIELD" booths are also available in floor models. Circle 75A.

Other literature available:

"Noise-Lock" Doors — Circle 68.
"Quiet" Rooms for Supervisory Personnel — Circle 69.
Control Rooms — Circle 70.
Silencers for Air Handling Systems — Circle 71.
High Intensity Noise Chambers — Circle 72.
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Medical Dept. NS-361

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City_____ Zone____ State_____

CIRCLE 54 ON READER CARD

To Control Industrial Noise:

The keys are survey, analysis and engineering

NOISE may be objectionable to individual workers because of pitch, rhythm, quality, intensity, or a combination of these elements. And such unwanted sound can be translated into accidents, when the noise cancels or blunts normal alertness and care on and off the job environment.

Physically, noise is harmful or not harmful to hearing, depending on the character of the sound and exposure to it by employees.

Generally noise is a problem to industry for four main reasons:

1. *Employee Health.* The hearing of some workers may be injured under certain conditions of exposure.
2. *Compensation Costs.* Claims for occupational hearing loss, already being paid in some states, may reach unpredictable proportions.
3. *Influence on Accidents.* Noise may be a contributing cause of accidents through interference with communications or as a result of noise-induced fatigue or nervous tension.
4. *Public Relations.* Objectionable noise in the surrounding community creates poor public relations; a trend toward legal restrictions is developing.

Components of sound are:

1. Intensity, related to loudness.
2. Frequency, related to pitch.
3. Quality, or timbre.

Measurement of Noise

Over-all intensity of steady-state noises (those of relatively uniform intensity) is measured with a sound level meter. It consists of a microphone, an amplifier, a calibrated attenuator, three weighting networks, and an indicating meter. For testing impact noises, with sharp fluctuations in peak intensity, special techniques and instruments are needed.

Since the sound level meter measures only over-all intensity, it is primarily a screening test. Where the need for more precise information is needed, the frequency distribution of the noise must be determined. The commonly used instrument for this purpose is the octave band analyzer, which measures separately the sound intensity in each of eight frequency bands, each one octave in width. For some purposes, analyzers having narrower band widths are used.

The unit of sound measurement is the decibel (db). A level of zero decibels (zero reference level) represents roughly the weakest sound that can be heard by very sensitive ears. At about 130 decibels, sound is so intense that it produces a sensation of pain in the ear. Comparative intensities of familiar sounds are shown in Table I.

Loudness, Frequency and Quality. Noises of varying frequency and quality differ in their effects upon the hearing mechanism and in the types of sound produced.

All noises of equal intensity do not sound equally loud. The ear is the most sensitive to sound in the middle frequencies, roughly from

CIRCLE 55 ON READER CARD





CIRCLE 56 ON READER CARD

1000 to 4000 cycles per second (cps). For example, to the average person a 20 db sound at 1000 cycles per second sounds about as loud as 50 db sound at 100 cycles per second. See Fletcher-Munson equal loudness contours chart.

Both frequency and quality influence the characteristic sounds from various sources. A locomotive whistle, for example, produces a sound of low frequency while air escaping from an air hose produces a sound of high frequency.

Two sounds of equal intensity and pitch may vary appreciably in character or in the annoyance they cause due to differing harmonic make-up or quality.

Critical Levels. Precise limits for injurious noise are still uncertain. The problems of noise exposure and control require much more research and evaluation. A complicating factor is that some hearing loss is expected with increasing age, regardless of noise exposure.

TABLE 1
Scale of Representative Sounds
(Decibels)

Zero Reference	0
Whisper	20
Low Street Noise	40
Conversation	60
Heavy Traffic	80
Subway	100
Airplane	120
Jet Engine	140

The ear reacts differently to noises at different frequencies and noise of high intensity is believed to be more injurious with high frequencies than when the frequency is lower. In determining critical levels, several other factors must also be taken into consideration. These are:

1. Frequency or pitch
2. Total length of exposure
3. Length of exposure periods
4. Whether sound stimuli are continuous or interrupted
5. Length of interruptions
6. Type and space of environment with reference to reverberation.

Consideration of these environmental factors does not enable establishment of a criterion applicable to each individual. There is a wide difference in individual susceptibility to noise damage.

Because of the differences in the effects of noises of varying intensities as well as frequencies, it is conceded that no precise criterion can be stated in terms of over-all noise level. Individual frequencies must be considered. In general, however, it can be stated that exposure to noise levels above 130 db may cause permanent damage to normal ears, even after relatively short exposures. Also, as a general statement, it is assumed that over-all noise levels in excess of 90 decibels indicate the need for detailed analysis to determine whether noise control measures are necessary.

If a sound level meter is not available, an approximate idea of the noise intensity may be obtained as follows: walk through the plant with a person having normal hearing and try to carry on a conversation. If shouting is necessary, the sound level is probably higher than 90 db.

Methods of noise control fall into two classes: (1) engineering; (2) medical.



Straightaway®

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STANDARD EQUIPMENT FOR U.S. NAVY
(Specification MIL-H-22172 (WEP))

Straightaway Ear Protectors shown being worn by a U.S. Navy catapult crew attenuate the ear splitting noise of carrier based jets.

Protect your own employees against any injurious noise in your plant. Cut down wasteful worker fatigue and avoid compensation claims for auditory impairment. Model 372-9A (shown here) is remarkable in attenuation, with filter puffs that trap more noise. It is so comfortable that you forget you are wearing Straightaway.

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Pioneer designer and manufacturer of space suits

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CIRCLE 57 ON READER CARD

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INDORSED BY LIABILITY INSURANCE COMPANIES

For Maximum Protection! For Best Safeguards Against Compensation Claims!

Why FLENTS solve your noise problem:

- Workers prefer FLENTS because they are comfortable and easy to use.
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FLENT EAR STOPPLES are now being used by a vast number of prominent industrial firms.

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Also available on request; FLENTS' booklet: "INDUSTRIAL NOISE."

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PRODUCTS COMPANY, Inc.
103 Park Ave., New York 17, N. Y.
SERVING U.S. INDUSTRY OVER 30 YEARS

Engineering Control

Methods for reducing the noise level may be classified as follows:

Control at source. The most fundamental attack on noise hazards is removal at the source. With good engineering design much noise can be eliminated. Many industrial machines and home appliances have been greatly quieted by improved design.

This approach will usually be the responsibility of the machinery manufacturer, although it is possible to modify equipment already in use in some instances.

Lack of balance in rotating machines can set up vibrations which are magnified by other parts. Resilient materials can be used for parts which are causing noise. Machinery covers can be damped with undercoating material.

Much unnecessary noise results from worn and improperly maintained machines. It is important, therefore, that machines be kept in good operating condition.

Substitution. Another method of control is to substitute a less noisy operation, if possible. Spot, arc, or flame welding may be substituted for riveting in some operations. Application of this method is limited but it should be considered.

Isolation. Frequently noise can be isolated so its disturbing effect will be encountered by fewer people. A noisy machine may be placed where only employees necessary for the job are exposed. Isolation, however, does not help the men who must work in these areas. They should be provided with ear protectors.

Well-insulated partitions and tightly-closed doors, preferably of the refrigerator type, should be provided between a noisy room and adjoining areas.

Reducing time of exposure is also helpful. Noisy processes should be made as automatic as possible, so that workers can retire to a quieter area at frequent intervals. Quiet surroundings should be provided for lunch and rest periods.

Reducing vibrations. If heavy machines are firmly bolted to concrete or wood floors, the floor often becomes a huge sounding board.

Resilient mountings of various types will usually reduce both vibration and noise. Resilient floor coverings further reduce the noise level. However, vibrations transmitted through the base of a machine and radiated as noise from a floor is, in most cases, predominantly low frequency. Since industrial noise is commonly most objectionable at higher frequencies, reduction at lower frequencies by isolating mountings for machines is not as important as sometimes assumed.

Sound-absorptive materials are extremely useful for controlling noise in buildings. Hard surfaces, such as plaster and brick walls, reflect sound and cause reverberation.

A remedy is the absorption of high frequency sounds by the application of acoustical materials. Sound may come from several directions and travel long distances apparently undiminished.

Where structural treatment is not practicable, acoustical baffles suspended from the ceiling bring a substantial reduction in noise levels.

Acoustical treatment does not lessen the direct noise of machines.

Personal Protection

In some industrial operations the best sound control measures now available still leave the noise level too high for safety.

In such cases operators should be protected with properly designed and fitted ear protectors which will reduce the intensity of the sound reaching the hearing mechanism.

Types of devices for ear protection available commercially are:

Molded plugs are made of neoprene, vinyl plastic or rubber and inserted in the ear canal. These plugs are easily cleanable, and neoprene and vinyl are resistant to ear wax. Plugs should be smooth, with no abrasive action on the external canal. They should be fitted by a trained technician.

Muffs should fit the head snugly and be free of projections which could catch on machinery or structures. They must be easily cleanable and not cause undue pressure or perspiration at pressure points.

Helmets reduce sound energy transmitted to the bones of the head. The face should be covered for maximum effectiveness. The firm type of helmet, similar to a football or crash helmet, is rather warm, cumbersome and hard to get on and

off. Soft cloth helmets containing muffs are more comfortable and provide adequate protection at moderate levels.

TABLE II

Common Industrial Noise Levels
(Range in Decibels)

Spinners, looms, lathes	80-95
Screw machines, punch presses, riveters, cutoff saws	90-95
Planers, routers, sheet metal, speed hammers	110-115
Drop hammers, chipping hammers	110-125

Combinations of ear plugs and muffs or helmets give 3 to 5 more decibels of protection than either worn alone. They are used for intimate exposure to jet noise.

Waxed cotton plugs. Balls of wax and cotton are molded by the user to fit his ear canals. This is effective protection for most exposures. These plugs should not be confused with wads of untreated cotton which offer little protection when stuffed in the ears.

Amount of Protection. Commercially available earplugs, if properly fitted and used, generally reduce the noise reaching the ear by 25 to 30 db in the higher frequencies, which are conceded to be the most harmful.

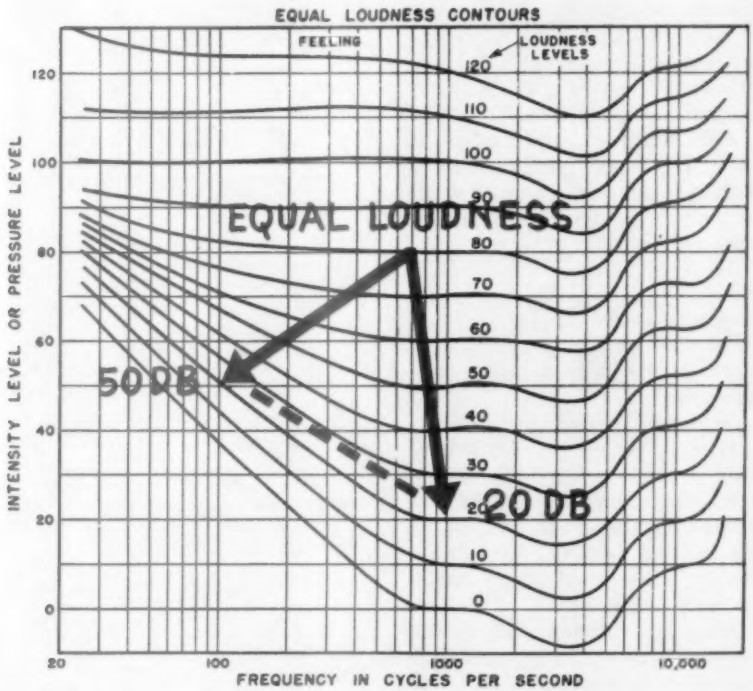
Until within the past five years, earmuffs were not considered as efficient as earplugs. Because of recent improvements in earmuffs, this situation has changed. Now available on the market are several earmuffs which will provide attenuation of sound on the order of 40 db in the important frequencies.

Individual ears and preferences differ considerably. It is advisable to have several types of devices on hand so that each individual may be fitted properly.

Based upon these factors, it is probable that well fitted earplugs will provide ample protection against sound levels on the order of 115 to 120 db and that the better earmuffs are effective in noise levels some 10 decibels higher.

Medical Control

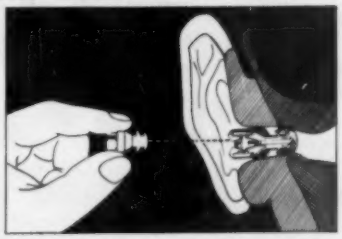
Where processes are noisy, engineering control methods should be supplemented by medical supervision. A record of each employee's hearing should be kept, with periodic tests to detect possible deterioration.



The Fletcher-Munson equal loudness contours. The curves show intensity in decibels required to equal in loudness the indicated intensities at 1000 cycles per second.

CIRCLE 59 ON READER CARD

HARMFUL Effects of
NOISE to The **Ear Drums**
ELIMINATED by using
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IT TAKES ONLY 30 SECONDS TO PROVE this. WE GUARANTEE IT! These are NOT EAR PLUGS! They are scientifically developed sound controls that protect the eardrums WITHOUT interfering with NORMAL CONVERSATION OR HEALTHFUL AIR CIRCULATION.

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The No. 45 has highest sound quieting efficiency. No rushing to distant shop office for important phone calls. Available for wall mounting or free standing on steel legs.

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CIRCLE 60 ON READER CARD

Selling Ear Protection

Most workers fail to wear hearing protection devices unless noise levels are too high or annoying. And the average employee isn't particularly concerned about ear damage that may catch up on him 10 to 20 years in the future.

As a result, the use of ear plugs and protection campaigns are experiencing up-hill pulls in educating workers to shield their hearing.

Industries, insurance companies, and other agencies are constantly seeking new hearing protection, and new methods of making each man realize what he stands to lose if he does not protect himself now. Some day, it is hoped, the effort will be equal to that of eye protection.

Ear protection is still somewhat new, and loss of hearing is a gradual type of injury. It lacks the dramatic elements of the loss of an eye, arm or leg.

A weak link in the total effort is getting the employee to the ear physician. An effective program needs medical follow-up. With the doctor in the picture, the result is usually greater interest, better attitudes, and more hearing protection equipment worn.

Fitting. Too much emphasis cannot be placed on correct fitting of ear plugs. When fitted profesionally by a nurse or technician, the program has more prestige.

Each ear should be fitted separately with a plug that fits snugly with no more than slight discomfort, which should be only temporary. If plugs are too uncomfortable, they are not doing the job properly. Individual ear canals differ in size, and a person might need a different sized plug for each ear.

A loose plug can be worse than none. While the fitting is being done, the technician (doctor, nurse or trained layman) should explain the fitting procedure, pointing out that plugs must be fitted personally to each wearer.

At least three or four makes of ear plugs should be available. A type that is suitable for one man may be unsuitable for another. Men are advised to try different devices on the job and report back to the safety or medical department. A choice seems to make any proposition more attractive.

Injurious effects from sweating are not likely, providing there is no existing pathology in the external or middle ear. There is no danger to the drum from wearing soft plugs. None of those generally used are long enough to reach the drum head, if properly fitted.

Promotion. The program can be aided by posters, picture stories in employee publications and demonstrations at safety meetings.

A good example helps. Many safety men wear goggles and safety shoes on the job. It gives them added authority when they urge employees to protect their eyes and feet. Safety men might also experiment with various types of ear protection and wear them in locations where it is expected of employees. Suggestions based on personal experience are always more convincing.

Hearing Can Be Helped

Medical and surgical treatment, plus hearing aids, now offer improvement to the more than 17 million persons in this country with hearing impairments.

This disability often is found in industry, and hearing improvement effectively reduces problems related to it and communications, emotional adjustment, and even susceptibility to mishap.

The transistor, introduced in 1952, has made possible efficient hearing equipment so small it can be built into spectacle temples or worn directly in the ear.

Medical examination. Before trying any hearing aid, the patient should have an otologist (ear specialist) evaluate his hearing. This will show whether medical or surgical treatment or a hearing aid will correct hearing.

Hearing centers in many areas help persons in need of hearing aids. These may be maintained by hospitals, colleges and societies for the hard of hearing. Services are usually non-medical. They include an audiometric test to determine hearing loss, selection of a hearing aid, and training in its use. Some also offer lip reading, speech correction and guidance in personal and employment problems.

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SECTION 5

PERSONAL PROTECTION Part 1

IN SECTION 5:

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Be Safe—and SEE! 120

CIRCLE 75 ON READER CARD →

Eye Specialist, Plant Cooperation Urged

By HEDWIG S. KUHN, M.D.



Hedwig S. Kuhn, M.D., is a consulting opthalmologist to industry, associate editor of the *Journal of Industrial Medicine and Surgery*, and serves on the advisory committee of the Calumet Area Safety Council. She has practiced opthalmology in Hammond, Indiana since 1923. Dr. Kuhn's advice in eye protection matters has been invaluable to such organizations as the National Safety Council, the President's Committee to Employ the Physically Handicapped, the President's Traffic Safety Committee, the Industrial Medical Association, and the National Society for the Prevention of Blindness.

EYE-PROTECTIVE PROGRAMS have become a must in any industry or on any job where eye-hazardous conditions exist. The modus operandi, personnel involved, the foreman's real knowledge of good practices,—all these factors make for a good or a poor program. Good programs require more insight into areas of over-all information than is recognized.

Perhaps it will help to state major headaches in the operation of an effective eye protection program.

Tints — Even though a person wears a tint in his dress glasses, such a tint in a hardened lens would reduce visibility greatly.

All tints are contra-indicated in safety eye wear. (We are not talking about infrared and ultraviolet tinted filter lenses here).

Bifocals — While for dress purposes one of the fancy flat-topped, ultex or other patented types of bifocals might be indicated, they are (with a few rare exceptions) not necessary in safety glasses. They always are expensive and the extra cost, if the employee insists, should be borne by the worker.

With the exception of draftsmen and several executive jobs, trifocals are also contra-indicated.

Frames — The company setting up an eye protection program should decide on the equipment it wants — type of frame, which optical company, whether or not side shields, and other considerations. The choice should be made on the basis of quality (cheap merchandise is never a sound investment) and of meeting government specifications.

Any policy where an employee has choice of four or five different types of frames heads for trouble. It is industry's responsibility to make a wise choice and to stick to it.

Aphakic Lenses — These are lenses needed by a man who has had a cataract extraction. They are heavy and thick and need not be hardened; but if hardened, they cannot be worn comfortably because their weight often is intolerable. Plastic cataract lenses are sometimes substituted, as they also have the necessary safety values.

Special Jobs — Welding is one of the areas of eye protection that probably produces more headaches than any other, especially for the man over forty. While some men wear bifocals under their hoods without trouble, this is the exception.

A plus lens inserted in the hood and giving proper near vision correction is the best solution, if picked out by the professional eye man and not by the safety man and worker on a trial basis.

That method is not only wasted effort, but can lead to real trouble. The age of a person does not determine the choice of helmet lens nor can trial tests by a worker do so, any more than picking up reading glasses in a 5 and 10 cent store is a proper method of getting glasses. There are also such things as upside-down bifocals for overhead work — welding, pilots of airliners, and other specialized activity.

Close cooperation and advice of the company's professional eye consultant is of great importance and value to any eye protective program.

One factor which makes problems for the safety man originates with the professional eye man responsible for measuring the worker for glasses. If he lacks understanding of the industry and job operations, or even of the specific type of protective equipment needed for a specific job, he cannot properly measure or choose a proper type bifocal.

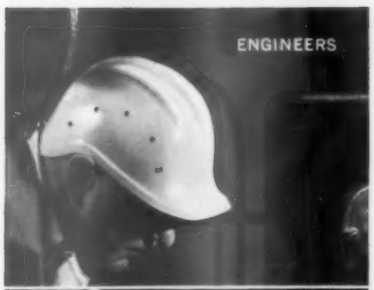
Few men to whom the worker goes for eye care have ever set foot in a plant. Most cannot know enough to order intelligently. Some professional eye men, through their lack of awareness of special needs, write up orders that cannot be used.

In some industries a statement of the type of work, including work distances and the safety man's description of what his industry needs by way of equipment, helps a great deal.



NEW BULLARD FEATHERWEIGHT BUMP/CAP

INDUSTRIAL SAFETY EQUIPMENT





Here's the ideal close-quarters head protection to guard against scalp lacerations and contusions — the "hidden hazard" that's costing many industries thousands of lost man hours daily.

- SO STURDY AND SCIENTIFICALLY DESIGNED that it completely protects top, back and sides of head from all bumps.
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This worker is a walking display of personal protective equipment, from his hard hat to goggles, face shield, and rubber gloves.

Humans Need Hard Hats

Because each worker *is* human, he takes chances

IN MANY industries the hard hat has become the symbol of safety. Anyone who looks up at a skyscraper under construction or down into a new subway being built will see a variety of hard hats. A robust group of workmen wear the hats as proud trademarks of a rough job—safely done.

The hard hat, first introduced in mines shortly after World War I and much improved since then, has an impressive record of lives saved. Head protection has become standard practice in other industries, including construction, logging, shipbuilding, and many types of maintenance work.

Head protection is also becoming general among public utility companies where linemen wear protective hats for protection against live wires overhead as well as against impact.

Protective hats are also useful where there is danger of bumping the head against overhead structures.

Wearing protective hats is included in many labor contracts and the unions have helped in educating their members on the need for head protection.

Requirements. A protective hat should have:

1. Resistance to impact.
2. Resistance to fire.
3. Resistance to moisture.
4. Light weight.
5. Insulation against electricity if worn around live equipment.

These requirements are outlined in *Federal Specifications GGG-H-142b: Construction Workers' Helmets.*

Types. The type in general use has a brim all the way around, protecting the head, face and back of the neck.

The cap type is sometimes preferred for confined spaces where a brim might be in the way.

Some models have brackets to support miner's cap lamps or welding masks.

Construction

Materials most widely used are laminated plastic, glass fiber, and aluminum alloy.

Cloth laminated plastic molded under high pressure resists impact and effects of water and oil. Dielectric strength is good but not equal to the protection in hats designed especially for electrical workers.

Plastic molded under high pressure is resistant to impact and the effects of water and oil. Electrical workers' hats are molded from special plastics and have high dielectric strength in addition to resistance to impact, water and oil.

Glass fiber impregnated with resin has a high strength-weight ratio; high dielectric strength; and resistance to moisture, caustics, and acids.

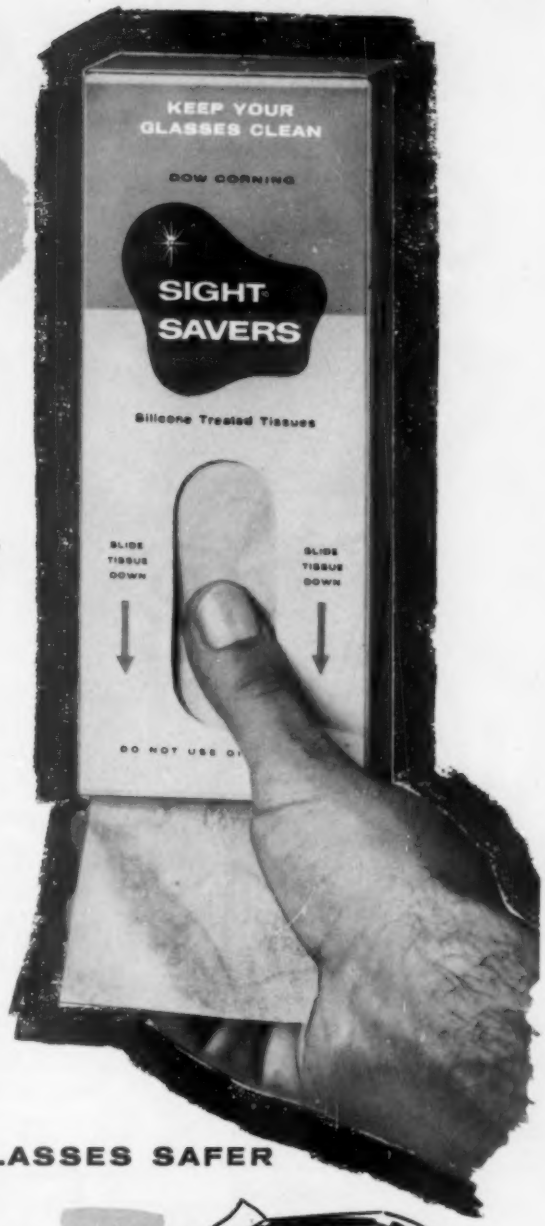
Aluminum alloy is light in weight and meets all requirements for resistance to impact and moisture, but it is a good conductor of electricity. Metal hats should not be worn where there is danger of electrical contact.

The hard shell of the hat is supported by a cradle or hammock which keeps the shell away from the head, cushions it against blows, and permits circulation of air around the head.

The cradle is adjustable up to a point but must provide a minimum clearance between the wearer's head and the underside of the top of the crown of the hat. This clearance must be maintained by proper adjustment so the cradle will absorb the shock should the hat be struck a hard blow. Without the cradle effect, a sharp impact on the hat would be transmitted to the skull with full force.

Cradle and sweatband should be replaceable because of deterioration through perspiration. This is important for sanitary reasons, since hats may be worn by more than one per-

EASIEST WAY
EVER DEVISED TO PUT
GREATEST EYE SAFETY
AT EVERYBODY'S
FINGERTIPS



The NEW SIGHT SAVERS® CLEANING STATION

- ***Attractive***—color blends with any decor . . . shop, office, washroom, first aid.
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- ***Easy to refill*** with Sight Savers tissues before empty.

Order new Sight Savers Cleaning Stations from your safety supply distributor now. List price $1.00.

SIGHT SAVERS KEEP SAFETY GLASSES SAFER

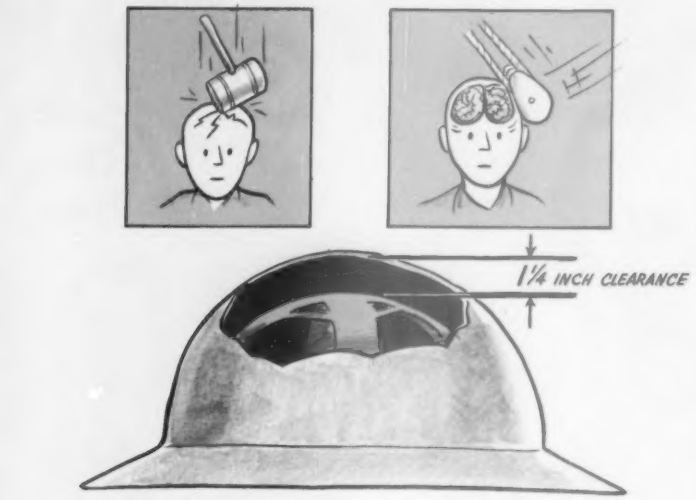
- *Sight Savers* contain at least twice as much silicone as other tissues! *They're completely soaked in silicone* (on both sides) for greatest cleaning and polishing action.
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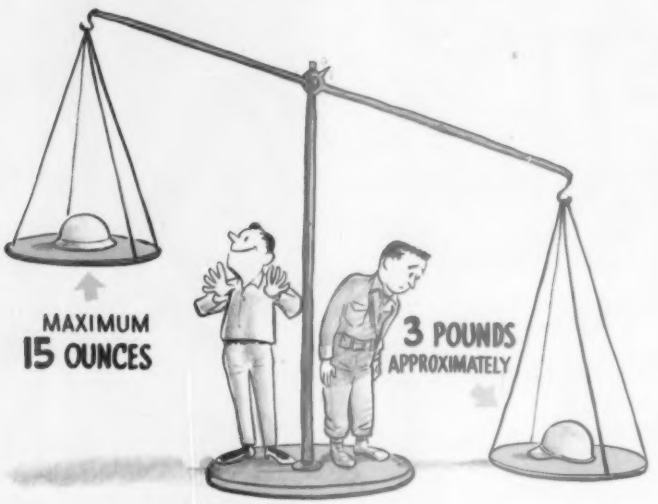


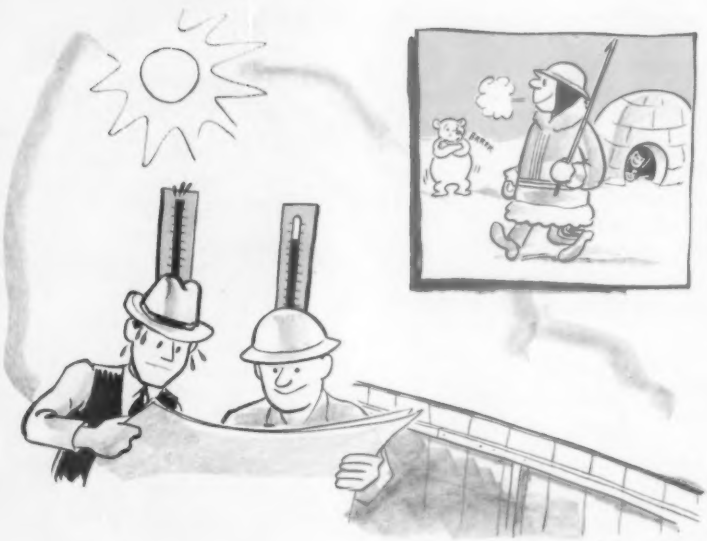
Nothing short of genuine Sight Savers can do the work of Sight Savers. Just ask your safety supply distributor . . . he has the facts!

first in silicones
Dow Corning CORPORATION
MIDLAND, MICHIGAN

CIRCLE 62 ON READER CARD







son. The shell can be sterilized by any of the common methods.

For cold weather a lining of water-resistant cloth may be attached to the hat to protect head, neck and ears.

On locations exposed to strong winds, such as bridges and oil derricks, a chin strap is useful.

An eyeshield of transparent plastic may be attached to some types of hats. It is hinged under the peak and lies flat against the peak when not in use.

Weight. A maximum of 14½ oz. for the complete hat is specified by Federal Specifications.

Colors. Hats are available from most manufacturers in seven standard colors—white, gray, red, green, blue, brown, and black. Other colors are available on special order. Color is permanent because it goes all the way through the material. A lumber company safety supervisor reports extra safety dividends from the wearing of brightly colored hard hats.

Special colors are sometimes ordered, or stock hats painted, to match the color used by the company on vehicles or in advertising.

Hats which glow in the dark are obtainable on special order.

Distinctive colors and designs are also used to designate the wearer's department or trade. This is often done in plants where certain areas are restricted to authorized employees.

No standards have yet been compiled for the use of color for identification of the wearer. Many civil defense groups have established codes and some industries have adopted similar plans. Following is a typical code:

Red—Pipe workers.
Blue—Fitters.
Green—Welders.
Buff—Rigging.
Yellow—Electrical.
Black—Labor.
Gray—Burning.
Brown bottom, white top—Painters.
Red bottom, blue top—Machinists.

These three pages from the National Safety Council's new Safetygraph No. 40, "Hard Hats," show the advantages of safe head covering. Hard hats cushion impact by means of the suspension (top), hard hats are comparatively light in weight (middle), and hard hats are cooler than conventional head apparel (bottom).



get modern eye protection

CLEARVIEW VISOR GOGGLE
MODEL No. 1
WITH SCREENED PORTS

WITH JONES FULL VISION VISOR GOGGLES

WITH ALL THESE EXCLUSIVE FEATURES . . .

- VISOR TOP STOPS GLARE from overhead light
- 100% VISIBILITY for greater safety and comfort
- FITS over LARGE frame GLASSES
- NO STRUTS or frame to obstruct vision
- NEW VISOR head band suspension for added comfort
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- NEW down-angle lens
- INCREASED impact strength
- NO FOGGING—no pitting
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- NEAT — smart — modern appearance
- SAFELY NON-FLAMMABLE
- LIGHT WEIGHT—cool comfortable
- ECONOMICAL to use
- ULTRA VIOLET ABSORBING LENSES

SEND FOR ILLUSTRATED CATALOGUE FOR MODELS LISTED BELOW:

ASSURED WORKER ACCEPTABILITY

CLEARVIEW	#1	Clear Lens
GLARESTOPPER	#1A	Light Pale Green
GLARESTOPPER	#2	Pale Green
GLARESTOPPER	#2A	Grey-Sun Goggle
GLARESTOPPER	#3	Dark Sage Green

Choice of 18 hole or Screened Port ventilation

ONE-PIECE SHATTERPROOF PLASTIC LENS
(METHYL-METHACRYLATE)

ELIMINATE EYESTRAIN AND REDUCE FATIGUE

CALL YOUR JOBBER OR WRITE TO:

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VISIT US AT BOOTH No. 2, NEW YORK SAFETY EXPOSITION

CIRCLE 63 ON READER CARD

Gray bottom, white top—Shear and blacksmith shops.
Lavender—Expediters.
Aluminum—General foremen.
Brown bottom, yellow top—Caulkers and sanders.

A black line on a helmet denotes a foreman and a red line a leaderman. Badge numbers are also stenciled on the front of each helmet.

Work Caps

Where protection against impact is not required, light cloth or paper caps are worn to protect the hair against paint splashes, dust, oil, and other non-corrosive substances.

One type of disposable work cap is of heavy Kraft paper treated with neoprene and a flame retardant. The material is water-repellent and resistant to acids and alkalis.

Headwear for Women

Women are seldom employed in peacetime occupations where protective hats are required. Their hair, however, provides a problem around moving machinery. Much effort has been expended in designing headwear that provides adequate protection and is reasonably attractive in appearance. Much more effort is expended in persuading women to wear it.

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Breathing Is Dangerous

If you expose your lungs to contaminants



Final operation on "runner bar" for glass industry requires grinder to smooth roughness from grooves in large casting. Fine dust produced makes a good respirator a must in this type of work.

AIR CONTAMINANTS in a plant may range from harmless substances of minor nuisance to deadly mists, vapors, gases and dusts.

Any safety and hygiene program in an industrial setup should have as its primary goal the removal of these contaminants and the enclosure of any operations to cut down concentrations of contaminants in the working areas.

There are also operations where exposure is brief or infrequent. For such situations personal protection is needed.

The worker's air intake may be safeguarded by three principal methods:

1. Mechanical filtration to remove dusts, fumes and mists.
2. Absorption or chemical reaction to remove gases and vapors.
3. Supplying respirable air or oxygen.

Types. Five general types of respiratory equipment are:

1. Canister gas masks.
2. Chemical cartridge respirators.
3. Mechanical filter respirators.
4. Supplied-air equipment (hose masks and air-line respirators).
5. Self-contained apparatus supplying oxygen or air.

Each type of equipment has a definite field of usefulness, as well as limitations. Manufacturers and dealers therefore want to know the type of exposure when equipment is ordered.

Approval. Equipment which meets accepted standards carries the label of the Bureau of Mines. The Bureau publishes an information circular that lists the respiratory protective devices that it approves. Approval specifies type and limits of exposure.

Gas Masks

A gas mask consists of a face piece connected by a flexible tube to a canister that is supported by a canister harness. Inhaled air is drawn through the canister which cleans it chemically. No single chemical yet discovered will remove

INTER CHANGE ABILITY



BAUSCH & LOMB SAFETY EYEWEAR FITS EVERY WORKER, EVERY JOB

Here's the sensible, lowest-cost way to provide the "old shoe" comfort and the good looks that make workers *want* to wear their safety glasses.

Interchangeable temples and fronts, with rigid or adjustable nose pads, fit every head, large or small, round or thin. Redy-Fit side shields are attached in seconds, when needed, to fit the protection to the job. And you're sure of vision right for the job with Bal-SAFE lenses, plano or prescription, in any required tint.

It all adds up to protection-PLUS! Extra strength, far exceeding U. S. Government standards of impact resistance in lenses and frames. Extra comfort and styling, assuring that the eyewear will be *worn*. Extra economy in quick replacement of damaged parts from stock. Yet you pay not a penny more for B&L.

Check with your B&L safety products supplier. Or write to Bausch & Lomb Incorporated, 90315 Lomb Park, Rochester 2, New York.

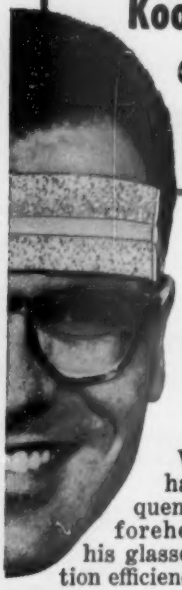
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Protection PLUS Safety Products

protection + economy + worker acceptance

CIRCLE 64 ON READER CARD

Here's why cost-conscious plants buy Koolpads every summer



When a worker has to stop frequently to mop his forehead and wipe his glasses, his production efficiency has to drop.

That's where Koolpads come in. Every lightweight, cellulose sponge Koolpad holds six times its own weight in perspiration! Production delays to mop foreheads and wipe glasses are cut to an absolute minimum. In addition, a Koolpad dampened slightly in water before wearing gives a refreshing "lift" that helps shrug off some of the effects of stifling heat . . . . the immediate result is often improved production.

Each Koolpad is packed in a clean, neat envelope as an extra sanitary precaution. Also, every Koolpad has an easily adjustable elastic headband for a comfortable fit.

● **Insist on Koolpads, the sweatband with all these features . . . and the sweatband that can be rinsed in seconds and used over and over again.**

STANDARD SAFETY EQUIPMENT COMPANY

431 NORTH QUENTIN ROAD
PALATINE, ILLINOIS

BELLEVILLE 7, N.J. CLEVELAND 10, OHIO
LOS ANGELES 66, CALIF.

CIRCLE 65 ON READER CARD

all contaminants, so the canister must be chosen for the exposure.

The greatest range of protection is provided by the universal mask for use against combinations of acid gases, organic vapors, ammonia, carbon monoxide, and smokes. However, as the number of gases increases, the service time of the canister decreases.

Canister gas masks with full facepiece are for emergency protection in atmospheres that are not deficient in oxygen, but which are immediately dangerous to life. Their effectiveness is limited to concentrations of two per cent by volume, except for ammonia, for which the limit is three per cent.

Characteristics. Types of gas masks, their identifying colors and uses are:

White – Acid gases, such as hydrogen sulfide, sulfur dioxide, chlorine, hydrocyanic acid.

Black–Organic vapors, such as aniline, benzene, ether, gasoline, carbon tetrachloride, chloropicrin.

Green – Ammonia gas.

Blue – Carbon monoxide.

Yellow – Combination acid gas and organic vapor.

Brown – Combination acid gas, organic vapor and ammonia gas.

Red – Universal – all industrial

POTENTIAL ASPHYXIA HAZARDS

(Globe Industries, Inc.)

Class	Type	Preventive Measures
Diseases	Cardiac conditions Asthmatic, circulatory cases Hypertension sufferers	Regular physical checkups Constant surveillance and encouragement to observe doctor's advice Employee instruction and job selection
Equipment	Chemical, oil tanks Vats and containers Poorly ventilated rooms	Hoods over tanks, etc. Exhaust systems Make-up air systems Oxygen masks (self-contained breathing apparatus) for special areas and jobs Employee training
Electricity	Power and transmission lines Powered equipment Transformers Portable power tools Lightning	Signs, identifying color, guard rails and fences Maintenance and inspection of tools Proper grounding of tools Isolation of areas Employee training
Asphyxiating Gases	Carbon monoxide Exothermic and endothermic atmospheres Carbon dioxide Volatile hydrocarbons	Signs, identifying color, guard rails and fences Hoods and exhaust equipment Continuous atmosphere sampling and checking Regular maintenance of all equipment, pipes, fittings and tanks Oxygen masks (self-contained breathing apparatus) for special jobs and areas not rendered safe by other methods Employee training
Chemical Irritants	Chlorine Ammonia Hydrochloric acid Hydrogen sulphide Lime Sulphur Hydrofluoric acid gas Nitrous fumes Chloride of lime Bromine Beryllium Nitric acid Phenols Phosgene Benzol Anticholinesterase agents Naphthol Sulphuric acid Hydrocyanic acid	

ONLY FIBRE-METAL

Safety Hats and Caps offer so many COMBINATIONS of HEAD and FACE PROTECTION

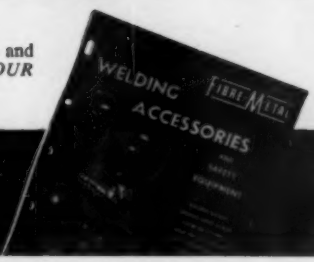


All FIBRE-METAL Safety Hats and Caps have the new DUAL Suspension ... with both a "fixed" safety factor and an "adjustable" clearance from the shell. A *polyethylene* exclusive ... strong, pliable, comfortable, easy to clean.

QUICK-LOK is the only BEST way to convert face protection to *head and face protection!* Easy to use, rugged, convenient, fast, positive.

OVER 50 YEARS OF WELDING & SAFETY EXPERIENCE!

These FIBRE-METAL COMBINATIONS are just a few of the many more possible...shown and described in bulletins and in our general Catalog No. 26. Just ask for them... *from YOUR WELDING & SAFETY DISTRIBUTOR!*



The FIBRE-METAL Products Company | CHESTER PENNA.

In CANADA: Fibre-Metal (Canada) Limited, Toronto

CIRCLE 73 ON READER CARD

CIRCLE 66 ON READER CARD→

gases, including carbon monoxide, smoke, and fumes.

White with green stripe–Hydrogen cyanide.

White with yellow stripe–Chlorine.

Cartridge Respirators

Chemical cartridge respirators usually have a half-mask face connected directly to a small container. Chemicals are similar to those used in gas masks.

Cartridge respirators are approved only for non-emergency situations–for atmospheres which are harmful only after prolonged or repeated exposures.

For hot jobs. A heat-exchanger cartridge permits work in excessively hot atmospheres. When the worker breathes in, heat is stored in the cartridge; when he exhales, heat is removed. Inhaled air is then reduced to a tolerable temperature. This respirator is worn with a specially designed hood.

Filter Respirators

A mechanical filter respirator can be designed to give satisfactory protection against almost any form of particulate matter. Major items to be considered are resistance to breathing offered by the filter element, adaptation of facepiece to faces of various shapes, and fineness of particles to be filtered out.

Bureau of Mines Schedule 21 A requires that the complete respirator show a resistance not in excess of 50 mm of water at (2 inches) at an inhalation rate of 85 liters (3 cubic feet) of air per minute. Resistance to exhalation under the same conditions may not exceed 25 mm. (1 inch). Commercial respirators are usually held to considerably lower resistances.

Mechanical filter respirators are not effective against solvent vapors, injurious gases, or oxygen deficiency.

Types of mechanical filters approved by the Bureau of Mines are:

1. *Pneumoconiosis-producing and nuisance dust respirators,* for such dusts as aluminum, cellulose, cement, coal, charcoal, coke, flour, gypsum, iron ore, limestone, and wood.
2. *Toxic dust respirators,* for protection against toxic dusts that are not significantly more toxic than lead, such as arsenic, cadmium, chromium, lead, manganese, selenium, vanadium, and their compounds.
3. *Mist respirators,* for protection against pneumoconiosis-producing, chromic acid, and nuisance mists.
4. *Fume respirators,* for protection against fumes (solid dispersoids or particulate matter) that are not significantly more toxic than lead, formed by condensation of vapors, as from heated metals or other substances.
5. *Various combinations* of the above types.

Supplied Air

Hose masks. Atmospheres immediately hazardous to life require air supply from a point beyond the contaminated area. With a hose mask, air is normally supplied by a blower. The wearer can inhale through the hose when the blower is not operating.

Hose lines with at least a 1-in. connection are used rather than air lines connected to a compressed air system. In a case of failure of air supply, it is possible to breathe



See K-LENS-M Booth 78 at the Greater New York Safety Convention & Exposition

CIRCLE 67 ON READER CARD



Thomas Maloney, Jr., Safety Director
Birdsboro Corporation, Birdsboro, Pennsylvania

Safety booms at Birdsboro

Savings from a new safety program at Birdsboro Corporation are a fat $100 per month. Lost-time accidents have been cut 70%. These are results of 4½ months' work by Safety Director Thomas Maloney, Jr., with the help of some new concepts in eye protection by Willson.

Eye injuries, formerly occurring at the rate of 20 per month, now average only six. Safety and employee acceptance are booming. Medical expenses and costly work interruptions are dwindling fast. Willson's new MonoSpec® safety glasses are simplifying fitting and reducing inventories in a way that is paying for the program out of savings. (turn the page for details)

WILLSON®







turn page

New concepts in eye protection boost safety and savings four ways



Your problem is "people protection"—50% people and 50% protection.

This program at Birdsboro Corporation shows how the right safety glasses can solve both problems conclusively—easily, and quickly.

Safety Director Thomas Maloney, Jr., is standardizing on Willson's new, smart-looking MonoSpec for protection against conventional machining hazards. His program, now approaching 100% coverage, got off the ramp fast, producing these important results:

1. **70% reduction in lost-time accidents.**
2. **$100 per month saving in direct labor costs.**
3. **Enthusiastic worker acceptance of a full eye program.**
4. **Elimination of fitting problems and large inventories.**

"Our loss in direct labor averages $7.80 an eye injury," says Mr. Maloney. "So our monthly average of 20 injuries was costing $1872 a year, minimum. Costs were inflated even further by medical care, high insurance rates, and time lost by men assisting injured workers or breaking in replacements."

Safety committees win worker consent

Committees from two Birdsboro plants evaluated more than 40 different types of safety glasses and goggles designed for grinding, turning, and welding. Their selection of Willson MonoSpecs assured success of the program. Worker reaction was pretested. Acceptance was immediate and enthusiastic, paving the way for complete coverage at minimum cost.

In the words of Mr. Maloney: "MonoSpecs are lightweight, sit softly on the ears and bridge of the nose. The frames and temples can be adjusted easily to fit individual head shapes. Safety lenses don't break and they resist pitting and scratching."

One-size bridge cuts hidden costs

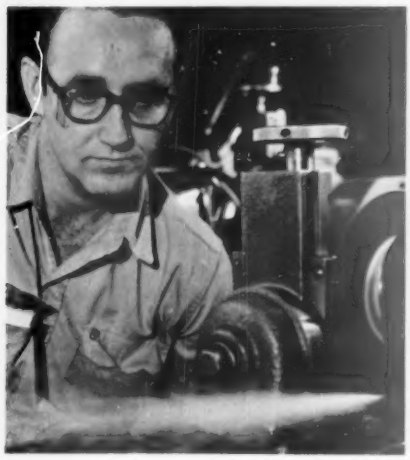
Birdsboro stocks only two MonoSpec lens sizes. The one-size bridge permits fitting 850 employees right from stock. Special try-ons and custom alterations are avoided. A small inventory covers every current and future requirement. Ordering, stocking, and record-keeping are simplified. Mr. Maloney sums it up this way: "Our eye program is efficient, yet the men have the complete protection they need."

Safety Counselor David W. Miller, Industrial Products Company, Philadelphia, worked closely with Birdsboro on all aspects of the program.

Ask your Willson safety equipment distributor for information about safety surveys, economic justification of programs, cost-reduction methods, and safety equipment application. He has Willson protectors for all *four* dimensions of safety—many new ideas in respiratory, hearing, eye, and head protection.

SAFETY IS WORTH WORKING FOR
WILLSON
SAFETY
CLINIC

MonoSpecs with plastic sideshields, Willson chipping goggles, and Kover-Mor® goggles provide protection workers at Birdsboro Corp. readily accept—can be worn with Willson MonoMask® respirators (right). MonoSpecs are available with popular F7 lens shapes, flesh- or charcoal-color frames. With sideshields, they offer excellent ventilation and unimpaired peripheral vision—clear, green plastic, or wire screen.







safety is worth working for

WILLSON®

Willson Products Division
Ray-O-Vac Company
Reading, Pennsylvania
In Canada: Safety Supply Company



Paper mill employee wears gas mask equipped with a speaking diaphragm while opening chlorine tank car. (Mine Safety Appliances Co.)

through a considerable length of hose.

Hose masks are not approved with more than 150 ft. of hose or where inhalation resistance exceeds 2.5 in. of water, or the exhalation resistance exceeds 1 in. of water, both measured at an air flow rate of 85 liters per minute.

Attachments of additional hose should not exceed the total prescribed length. It should be approved for use with that type of mask. The blower should be located so that only fresh, clean air is supplied to face masks.

The hose mask should always be used for work which involves entering tanks or pits where there is a dangerous or unknown concentration of dust, mist, vapor, or gas, or an oxygen deficiency.

Harness to pull the hose lines should be inspected before use. Component parts of harness must be able to withstand a pull of at least 250 lbs.

Air-line respirators are connected to compressed air lines. They are not intended for atmospheres immediately hazardous to life where the wearer could not escape if failure of the air supply required him to remove the respirator.

This respirator differs from the hose mask mainly in two features: it has a hand-operated, quickly detachable coupling connected to the belt or body harness so that the operator can connect to a compressed air hose, and the rate of air flow to the facepiece or hood is governed by the length of the air-supply hose and the air pressure applied to the inlet. Approved hose lengths and air pressures are listed on the approval label, also a flow-limiting device to permit air flows only between 2 and 20 cfm.

A trap and filter installed in the compressed air line ahead of the masks to separate oil, water, scale, or other extraneous matter from the air stream is desirable.

An air-pressure regulator in the line is required if air is supplied at a pressure in excess of 125 psi., also a pressure release valve which will operate if the regulator fails.

Supplied-air respirators are the best type for continuous use at one location. Other types of respiratory protective devices may give adequate protection, but offer breathing resistance and are consequently more fatiguing.

Air-supplied suits. Sometimes rescue or emergency repair work must be done in atmospheres extremely corrosive to the skin and mucous membranes, in addition to being acutely poisonous. For these conditions, complete suits of impervious material with breathing equipment are available.

If a hose line is used, it should be connected to the suit itself as well as to the helmet. Unless well ventilated, such a suit is fatiguing and dangerous to wear for long periods.

Abrasive blasting requires an adequate supply of filtered air, also mechanical protection for the head and neck—either a flexible hood or a helmet of some rigid material.

A window of transparent material, suitable for optical use, protected from the abrasive by a fine mesh wire screen should be provided. Both windows and protective screen should be readily replaceable.

Self-Contained Apparatus

For work in oxygen-deficient or highly toxic atmospheres at distances more than 150 ft. from the source of fresh air, self-contained oxygen-breathing apparatus should be used.

Two principal types of self-contained apparatus are: (1) recirculat-

ing type and (2) demand type. The recirculating type furnishes oxygen to the wearer; the demand type furnishes air or oxygen.

Care of Equipment

A central station for care and maintenance of respiratory equipment is desirable where many respirators are in use. Such a unit can also handle distribution and maintenance of other personal protective equipment.

Each employee should be provided with two respirators and either a locker or a hook at the central station. Each respirator should be banded or tagged with the employee's number.

Cleaning and disinfecting. All parts, except canisters and cartridges, should be cleaned after use. Facepieces, air lines and hose may be washed with soap and water, rinsed, and dried.

All respiratory devices should be disinfected before being passed from employee to employee. Methods of disinfecting include:

1. Immersion in solution of quaternary ammonium salt detergent. This material is not injurious to skin or to rubber.
2. Subjection to a moist atmosphere of antiseptic gas, such as formaldehyde, for 10 minutes.
3. Immersion for 10 minutes in a solution of formalin made by dissolving 1 part of 40 per cent formaldehyde.

If methods 2 or 3 are used, parts should be rinsed thoroughly after disinfecting to remove traces of disinfectant, then dried.

Elastic head bands may be damaged by disinfecting but they should be washed with soap and water. Bands should be replaced when the respirator is transferred to another employee.

The respirator should be turned in to the central station at the end of each shift to be cleaned and disinfected and repaired, if necessary.

Filters should be replaced when clogged, and used ones discarded.

Using Respirators

Respirators are often used as emergency equipment under conditions of strain and excitement. Those who will have to use them should therefore be trained thoroughly.

Training

1. Train each person in putting mask on and adjusting it rapidly to his face.
2. Have each person wear it long enough to become accustomed to the breathing resistance and to putting it on and taking it off.
3. Repeat training at regular intervals.

Maintenance of Gas Masks

1. Set up a card for each gas mask to indicate date of latest inspection and replacement of canister and amount of use, if any, which canister has had.
2. Replace canister that is assembled with facepiece at least annually, even if not used.
3. When a canister is replaced, examine facepiece, harness, hose, and headbands for leaks or deterioration. Replace defective parts.
4. Canisters are ordinarily supplied with seals to keep out air while in storage. Remove seals when canister is placed in service. Replace bottom seal after use.
5. Store mask in a place as cool and dry as possible and accessible to hazardous area.
6. If mask is for emergency use only, canister should be replaced after use.

Positive Pocket-Sized Protection





...against breathing hazards

Now firemen can add precious minutes to their search for trapped victims. Rockwood's lightweight PocketAIRE, the most compact self-contained breathing apparatus made, permits firemen to put in action faster and work more efficiently without hindrance by bulky equipment. PocketAIRE is small enough to fit in pocket, clamp to fire coat or be worn in a shoulder harness.

What's more, by using pure, clean oxygen PocketAIRE supplies the most concentrated, most effective element to safeguard human breathing. Another *extra* protection feature, on all PocketAIRE units, is the safety cylinder that allows 5 minutes for escape. Three models are available for a full 30 minutes . . . a full 20 minutes and a full 10 minutes. Cost pennies to refill and no maintenance required.

Protect every fireman in your department with economical, safe, simple to use Rockwood PocketAIRE.

For more details, write to ROCKWOOD SPRINKLER COMPANY, 2033 Harlow St., Worcester 5, Mass.

ROCKWOOD SPRINKLER COMPANY

A Division of The Gamewell Company • A Subsidiary of E.W. Bliss Company

Distributors in all principal cities

CIRCLE 72 ON READER CARD





For Better Results . . .

Official government statistics show 27% of industry accidents are eye accidents. 3% are injuries to eyes and an additional 24% are caused by poor vision due to faulty eye protection. These accidents cost industry more than 475 million a year. For goggles and glasses stay dirty and dangerous unless you make it easy as possible for workmen to clean them on the job. Further, foul sight holds back production 25% to 40%.

MAGIC Silicone-treated tissue deposits a protective film that keeps lens crystal-clear. The world's finest quality. MAGIC Lens Tissue far exceeds scientific needs. The sheet is BIG. 50% larger than usual and has twice the tearing strength. And both sides are packed with Silicone's Sparkle Power. It is interfolded—serving only one sheet at a time; not bunches. The compact dispenser is self-mounting; no screws, no drilling. Just stick it to the wall. No maintenance. No adjustments. No wear. No moving parts. Absolutely indestructible.

MAGIC Heavy-Duty Stations for grimy, oily areas or where Anti-Fog protection is needed. MAGIC Cleaning and Anti-Fogging COMBINES all ingredients. No double inventory. And it's pressure-packed. 1,400 applications per can. No pump. Nothing to refill. (Or, if you wish to use your home-made fluid we supply our Adapter ($2.70) with 16-oz. bottle and plunger complete.) Indestructible dispenser—releases interfolded sheets 1-by-1, greatly reducing waste. Paper (not Silicone-treated) is superb, super-strong, wet-strength quality. No scratching on plastic, and no lint.

Magic
Cleaning Stations

Exchange all your other Stations for Magic FREE

The Silicone Paper Company of America Inc. 75 East 45th Street, New York 17, N. Y.

CIRCLE 71 ON READER CARD

Be Safe—and See!

An accident costs much more than sight alone

EYE INJURIES are among the costliest permanent disabilities both in terms of personal loss to the worker and in economic cost of compensation. The ability to see is looked upon by most individuals as the most precious of the senses. Loss of sight is feared more than most physical handicaps not only because of the problems of securing employment but because most human satisfactions are dependent on the sense of sight.

A study of reports from six state labor departments shows that while the average cost for all fatal and permanent disability accidents is $1532, the average cost on an eye injury in this category is $2319. A recent National Safety Council survey of 332 industrial plants in every state of the Union showed that eye protection is mandatory in specific operation for 80 per cent of the plants. The survey, covering about half a million workers, also showed that about one out of four plants have a plantwide eye protection program.

The use of spectacles, goggles and other protectors have achieved near miraculous results in many plants. One safety man noted that costs of eye injuries were cut 90 per cent in one year. In another, a $95 per eye injury figure was reduced to $2.90 per injury.

Most companies require goggles or face shields on jobs where there is an obvious eye hazard, as in chipping and grinding. A few have established 100 per cent eye protection—for visitors as well as for all employees. They point to the fact that many eye injuries occur on "non-hazardous" jobs.

Benefits of plant eye protection programs carry over to off-the-job activities. Many workers wear goggles on home projects. This is often encouraged by selling equipment at cost or lending it for personal use.

During 1959 two teen-age boys saved their sight as a result of their safety-minded fathers' insistence that they wear safety glasses.

Evaluating Eyesight

Eye tests are a standard part of pre-placement examinations and re-examinations. They aid safe placement and enable the employee to have defects corrected.

Screening devices. Mass examination of employees can be made quickly with these devices. They detect substandard vision and appraise visual skills for various jobs. They do not diagnose specific defects.

Three models now available have been in use for years and have proved satisfactory. Scoring cards are provided with the instruments, and the manufacturers give instruction in testing and evaluating results.

Tests take about five minutes and can be given by trained laymen. Employees needing correction are



CIRCLE 70 ON READER CARD



SIDE SHIELDS THAT FOLD FLAT

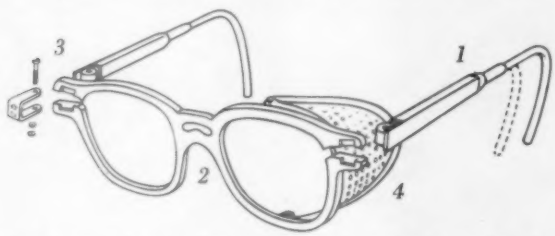
These side shields lay down to fit in your pocket — but stand right up to the job when you wear them!

Soft vinyl side shields fold *flat*, against the frame, then "remember" to open up for full side shield protection. Always handy, never left behind, these glasses go wherever you go.

And comfortable? The soft side shields conform to your face, above, below and beside the eyes. The temples telescope in and out as easily as the frame slips into your pocket. And the universal nose bridge fits 99 out of 100 noses. Light on your head or in your pocket — total weight, including glass or plastic lenses, is less than two ounces.

What about protection? These new Rapido FOLD FLAT side shield frames provide protection against all types of flying particles, dusts, sparks and harmful light rays. *Green* FOLD FLAT side shield frames and lenses provide stand-by protection in welding areas.

For protection, comfort and convenience, specify Watchemoket's Rapido FOLD FLAT side shield frames. Or write for Bulletin #607.



1. Adjustable RETRAX Temples — telescope in or out for perfect fit on any shape face.
2. Universal Nose Bridge — forms cradle for comfortable fit on any size or shape nose.
3. Spread-End Frame — makes lens changing quick, simple. Takes less than a minute.
4. Soft Vinyl Side Shields fold flat against frame for carrying ease in your pocket.

New Rapido FOLD FLAT Side Shield Frames

WATCHEMOKET OPTICAL COMPANY, INC.

Eye and Respiratory Protective Equipment for Safety in Industry

232 West Exchange St., Providence 3, R. I. • Throughout Canada: Levitt-Safety Limited.

WATCHEMOKET eye SAVERS

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referred to ophthalmologists or optometrists.

Types of Protection

For protecting eyes and face against various occupational hazards, four general types of equipment are used:

1. Goggles (safety glasses, spectacles)
2. Face shields
3. Welding masks and helmets
4. Acid hoods

Eye protectors should meet the following minimum requirements:

They should provide adequate protection against the particular hazards for which they are designed.

They should be reasonably comfortable when worn under the designated condition.

They should fit snugly and not unduly interfere with the movements of the wearer.

They should be durable.

They should be capable of being disinfected.

They should be easily cleanable.

For detailed information on various items of equipment, consult *American Standard Safety Code for Head, Eye and Respiratory Protection, Z2.1-1959.*

Corrective Lenses

For visual defects, the wearer may have his prescription ground in impact-resistant or ray-filtering optical material (glass or plastic) or wear cover goggles over spectacles.

For optical reasons as well as convenience, corrective lenses are generally preferred. Safety glasses, of course, must be somewhat heavier than ordinary spectacles.

In prescribing corrective lenses, the refractionist should be familiar with the wearer's job. It is particularly important to know the distance of the work surface from the eye.

Bi-focals mays be required for some individuals and some will find tri-focals helpful.

Cover goggles are often preferred where the correction is complicated and expensive lenses would be ex-

EYE PROTECTION FOR VARIOUS JOBS

TYPES OF EXPOSURE (American Standard Safety Code Z2.1-1959)	TYPES OF PROTECTION									
	CUP GOGGLES	SPECTACLES	— WITH SIDE SHIELDS	PLASTIC EYE SHIELD	PLASTIC FACE SHIELD	WIRE SCREEN SHIELD	FILTER LENSES	RUBBER OR VINYL GOGGLES	HOODS	WELDING HELMETS
Heavy impact, large particles — Chipping, calking, some riveting operations, sledging in quarries.	•		•							
Moderate impact, dust and small flying particles — Scaling and grinding metals, stone dressing where quartz is not involved, some woodworking operations.		•	•	•	•					
Metal sparks and spatter — Electric spot and butt welding, no exposure to excessive energy or glare.			•	•	•					
Splashing metal — Babbitting, pouring lead joints for pipes, casting hot metal, dipping in hot metal baths.	•			•	•	•				
Splashing liquids — Acids and caustics, dipping in galvanized tanks, some japanning operations.	•				•			•	•	
Reflected light and glare — Long exposure to light reflected from snow, water, roads, etc.; incidental glare from furnaces, working near acetylene welding.	•	•	•				•			
Injurious radiant energy — Moderate reduction in visible radiant energy — Oxyacetylene welding and cutting.	•						•			
Injurious radiant energy—Large reduction of visible radiant energy — Arc welding.										•

posed to pitting. They also have advantages where a nearsighted person requires deep minus lenses. These might be excessively thick at the edges yet too thin for adequate protection at the center.

Cover goggles are available in the cup types with heat-treated glass lenses and the wide-vision type with plastic lenses.

Types of Goggles

Safety glasses are available in many types for practically every occupation. The protective medium may be heat-treated glass, transparent plastic, wire screen, or tinted glass.

Heat-treated glass lenses in spectacle frames, or cup goggles offer basic protection. The nature of the job and its eye hazards determine the specifications.

Spectacle goggles are worn for light or moderately heavy work, such as buffing, polishing and machine work where the absolute facial seal of cup-type goggles is not required. Spectacles without side shields are intended to provide frontal protection only.

The frame must be rigid enough to hold the lenses in position in front of the eyes. The nose bridge should be adjustable, or goggles should be available in enough sizes to fit various faces.

Metal frames are more durable and easier to maintain, but the lighter and better looking plastic frames are preferred by many workers, particularly women.

Side shields of metal or plastic provide protection against light objects flying from the side. They should be used where operations are close together, or where employees work together.

Cup goggles are used for heavy grinding, machining, chipping, riveting, work with molten metals and similar operations.

The cup should be wide enough to protect the eye socket and distribute the impact from any blow over a wide area. The cup should be flameproof, corrosion-resisting, and non-irritating to the skin.

Mask-type goggles, with frames of soft vinyl or rubber, offer protection against splashes of corrosive chemicals and exposure to fine dust. This type is obtainable with lenses of heat-treated or untreated glass or acid-resistant plastic. Some types may be worn over spectacles. Ventilated types are less troubled by fogging.

Dust goggles, leather mask type, for non-corrosive dusts, are made with heat-treated, untreated or filter lenses. Wire screen ventilators around the eye cup provide air circulation.

Miners' goggles of corrosion-resisting wire screen are used for work underground and in other locations where extremely humid conditions make fogging a serious problem. A dull black coating on the screen reduces reflection.

Plastic lenses are now equal to optical glass in light transmission and freedom from distortion and are recognized by *ASA Code Z2.1-1959.* Corrections may be ground in them. They are light in weight and resist fogging. They are useful for spotwelding, as molten metal does not adhere to plastic as to glass.

Plastic withstands considerable

Unique New Suspension Makes APEX Safety Hats & Caps



Exclusive Most Efficient Design Cuts Suspension Weight 30%

Most efficient suspension ever designed . . . offers these outstanding advantages

- Simplified two-part design provides broader and better distribution of impact, prevents hat wobble, offers three-position adjustment for crown height and wearing angle.
- New formula polyethylene construction . . . resists cracking from long exposure to ultra-violet light.
- Insures minimum 1¼" safety margin between head and shell.
- Has greater range of adjustment to fit head sizes from 6½ to 8.
- In assembly easily snaps in and out of T-slots for quick replacement and fits any APEX hat and cap now in service.
- Built-in safety construction eliminates metal parts, buttons and tie string.
- Easy cleaning — greater hygiene.

There's an APEX safety hat or cap for every application:

- **FIBERGLASS** . . . . . in eight colors
- **ALUMINUM** . . . . . in five colors
- **ELECTRICAL** . . . . . in safety yellow
- **MINERS** . . . . . in safety yellow

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SAFETY DEPARTMENT

Boyer-Campbell

Division of The WHITE Sewing Machine Corporation

801 W. BALTIMORE AVE. • DETROIT 2, MICHIGAN

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impact but is marred or scratched more easily than glass.

Plastic lenses should be cleaned with liquid cleaners and soft tissues rather than silicone-treated tissues.

Specifications. Ease of cleaning and sterilization is essential. Most types on the market meet these requirements.

Goggles should be fitted as close to the eyes as possible without touching the eyelashes to give the widest possible angle of vision.

Minimum permissible size for oval lenses is 44.5 mm. in the vertical dimension and 48 mm. in the horizontal. Round lenses should be 50 mm. in diameter.

Lenses should have no appreciable distortion or prism effect.

Strength of heat-treated lenses (resistance to impact) should conform to specifications of the *Federal Standard Stock Catalog,* the government's official purchasing guide, Specification GGG-G-G-501B.

Sweatbands, worn across the forehead in hot, humid locations, help prevent fogging lenses.

Non-fogging compounds, applied to the lenses, help to keep the glass clear.

MENACES TO EYES

- Relatively large flying particles
- Dust and small flying particles
- Dust and wind
- Molten metal
- Gases, fumes and liquids
- Reflected light or glare
- Injurious radiant energy, requiring moderate reduction in intensity
- Injurious radiant energy, requiring great reduction in intensity

Face Shields

Transpartent plastic shields give eye and face protection on such jobs as metal sawing, working with chemicals, buffing, sanding, light grinding, or bottle manufacturing.

They should not be used for welding, heavy grinding, or where resistance to severe impact is necessary. Shields may be worn over spectacles.

The plastic sheet should be nonflammable and free from scratches or other flaws which would cause distortion. It should be heavy enough to resist distortion from light impact or heat and humidity.

Wire mesh shields are used for pouring low-melting-point metals, as in babbitting. The mesh stops splashes of metal and allows better ventilation than a solid shield. It will not fog under high temperatures and humidity.

Hoods and Helmets

Hoods and *helmets* of various types are worn to protect the face and head against hazards which do not involve heavy impact.

To obtain clean air, the compressor intake must be kept away from sources of contamination. The compressor should be well maintained. It must not run too hot, as dangerous amounts of carbon monoxide can be produced by overheating.

Some types of helmets include a hard hat.

These are equipped with windows but impact-resistant goggles may be worn underneath. If toxic fumes, dusts, or gases are encountered, an

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engine exhaust . . .
"made safe enough for a baby"
CATALYTIC PURIFIERS

Practical, fully tested and approved, will make your industrial engine exhaust safer. Dangerous Cancer Suspect Hydrocarbons and Carbon Monoxide reduced to safe levels will increase employee productivity; increase profits. Oxy-Catalyst Exhaust Purifiers will convert gasoline, LP gas or diesel exhaust into harmless vapor for safer indoor operation of lift trucks, sweepers, engine-generators, construction and mining equipment.

Also inquire about our Fume and Odor Elimination Equipment for industrial processes.



AIR POLLUTION CONTROL

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Berwyn, Pa.
Catalyst for cleaner, safer Air

SAFETY GLASS TROUBLES?



EYEGLASS HOLDER

Helps prevent slipping, sliding, falling off or accidental knocking off of personal or safety glasses.

Relief from sore ears due to curved bows. Positive, comfortable retention. Adjustable tips will fit all types and sizes of temple ends.

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720S—SELL-FIT with Side Shields, in Flesh or Green Frames

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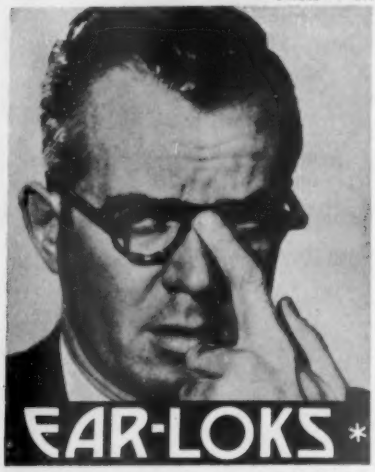
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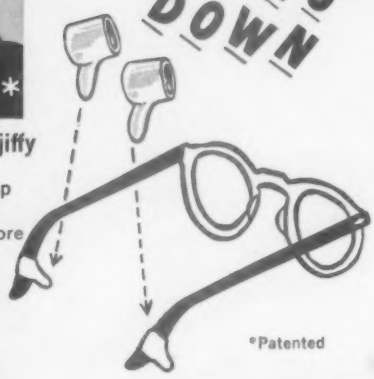
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air line should be supplied. As these hoods are rather warm, an air line is also desirable for comfort.

Fabric hoods protect the wearer from nuisance dusts and paint spray.

Fire-resistant duck, asbestos, and aluminized asbestos are used for varying degrees of exposure of heat, as in furnace and burning operations and fire fighting.

Rubber, neoprene, plastic film, and fabric impregnated with rubber or plastic provide protection against splashes of acids, caustics, or organic solvents. Not all of these materials are resistant to all exposures and the manufacturer should be consulted.

Hoods and helmets are frequently worn as part of a complete outfit giving head-to-foot protection.

Radiant Energy

Glass which filters out harmful ultraviolet and infrared radiation is available in many types of goggles, face shields, and helmets. These filter lenses are worn for welding and cutting, furnace and boiler observation, and other operations where there are high temperatures and excessive glare.

Melters' goggles of cobalt blue glass come in spectacles and cup types in graded shades. This type of glass does not provide protection against ultraviolet or infrared radiations.

Sun glasses are not effective ray-filter glasses for most industrial exposures. They are designed for protection against discomfort caused by sun glare. The better glasses conform to optical standards but many of the cheaper ones show considerable distortion.

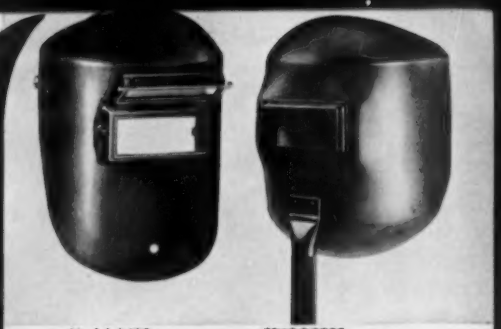
Welding helmets provide protection for the eyes and face under the severe conditions of arc welding. They are attached to headgear so they can be raised for placing the work. Impact goggles worn under the helmet provide protection when the helmet is raised.

Helmets are made of dielectric fiber resistant to sparks, molten metal, and flying particles, and having low heat conductivity. Replaceable cover glass protects the filter plate.

Some helmets have a lift-front glass holder which permits rapid in-

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Turretype Helmet

Model 1225
Turretype Handshield



Model 1105
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Model 1145 Maximum
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Model 440 Soft
Frame Goggle

Model 90 Cover-
Spectacle Goggle



Model 40
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Model 26
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spection of work without removing the helmet.

Hand shields are used on jobs where helmets are not practical, and on tack welding, setting up work, inspection, and time study work. Construction is similar to welding helmets.

Filter Lenses. Following are shades commonly used:

Nos. 1.5 to 3.0—For glare from ice, snow and reflecting surfaces; stray flashes and reflected radiation from cutting and welding in the immediate vicinity. (For goggles or spectacles with side shields worn under helmets in arc welding, particularly gas-shielded arc welding).

No. 4—Same as shades 1.5 to 3.0, but for greater radiation intensity.

No. 5—For light gas welding and cutting and light non-gas shielded electric spot welding.

Nos. 6 and 7—For gas cutting, medium gas welding, and non-gas-shielded arc welding using current values up to 30 amperes.

No. 8—For heavy gas cutting and non-gas-shielded arc welding using current values from 30 to 75 amperes.

No. 10—For arc welding and cutting using current values from 75 to 200 amperes.

No. 12—For arc welding and cutting using current values from 200 to 400 amperes.

No. 14—Arc welding and cutting using current values over 400 amperes, including carbon arc welding and cutting, and for atomic hydrogen welding.

Transmittances and tolerances in transmittance of various shades of filter lenses will be found in *ASA Code Z2.1-1959.*

Goggles are available in shades up to No. 8; higher numbers in helmets.

Heat-treated filter lenses are also available, or impact-resistant cover lenses may be used to protect filter lenses against pitting and scratching.

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Iron & Steel Engineers Elect Officers

C. E. PRITCHARD, general superintendent of rolling mills for Alan Wood Steel Company, has been elected president of the Association of Iron & Steel Engineers. H. L. JENTER, vice-president of operations of American Steel & Wire Division, U. S. Steel Corporation, was elected first vice-president of AISE. C. W. BRUCE, chief engineer of steel plants, Republic Steel Corporation, will serve as second vice-president.

In all the Arc Processes—

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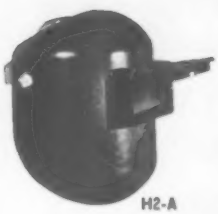
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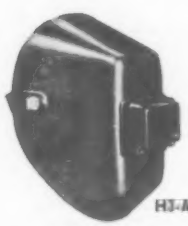
Curved Shell Fiber Glass
With Choice of three lens holders.
Shown: handy plastic lift-front type.

H2-A

Curved Shell Vulcanized Fiber
With choice of three lens holders.
Shown: front-loading metal holder.



H-10A



Narrow Shell Fiber Glass
With choice of three lens holders.
Shown: non-conductive plastic holder.

H3-AP

Straight Shell Vulcanized Fiber
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H-80AP



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With choice of three lens holders.
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H9-A

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G-538—Same as G-535, with wrap-around lens for extra-side protection and spatular temples with metal hinge. Ideal for grinding, chipping, riveting, etc. Side shields may be tucked under temples if desired. Also available with metal-core comfort cable temples (G-537).

All Pulmosan Plastic Goggles may be worn over prescription glasses, and are available with green lenses.

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Rules for Buying

No special hazard is involved in use of many of the items in an industrial plant. Selection may be governed by price, appearance, durability, or some other factor. However, many products have an important bearing on safety or health.

For personal protective equipment, careful selection is important. Goggles, hard hats, respirators, safety shoes, and garments are bought primarily for protection. Some of these items are covered by ASA standards, by approval labels of the U. S. Bureau of Mines and independent laboratories, and other certification. In this field, many companies have been in business for years and the reputation of their products is unquestioned.

Safety is important in selection of equipment for movement of suspended loads, such as rope, chain, and slings. In equipment for movement and storage of materials, operating efficiency and economy often are the reasons for buying, but the effect on hazards is equally vital.

Solvents used for cleaning may constitute or aggravate a fire or health hazard. Most of those substances in use for some time have been rated according to hazards involved in their use.

For fire protection equipment the lists of approved products issued by Underwriters' Laboratories and Factory Mutual Laboratories are recognized guides.

Lists of equipment bearing the label of Underwriters' Laboratories include: fire protection equipment; accident, automotive, and burglary protection equipment; hazardous locations equipment; electrical construction materials; electrical appliance and utilization equipment; and gas and oil equipment.

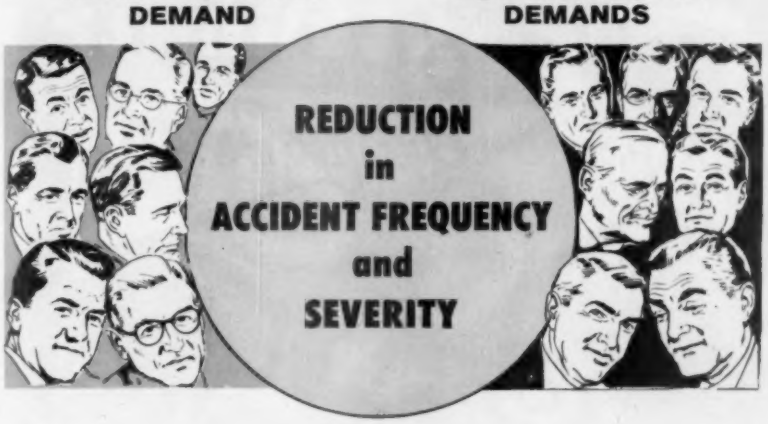
For all gas-using equipment, the list issued by the American Gas Association is a useful and dependable guide.

All products approved by these organizations carry conspicuous labels.

Unsuspected hazards may lie in use of ordinary items, such as common hand tools, tool racks, cleaning rags, and paints used for industrial interiors and machines.

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Model 7448 — fits 22, 24 and 26mm bridge sizes

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Glendale's new UNISPEC TWINS with revolutionary bridge design fit every face easily, comfortably. They represent a new advance in styling of industrial spectacles by incorporating ALL bridge sizes to assure universal fit, and unqualified approval of safety directors.
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Near acuity. Ability to focus and see well with both eyes separately at a distance of 15 in. This is the distance at which most machine and office work is done.

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as light and comfortable as a jacket



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Magnetized rubber stripping sealed into the Gra-Lite, holds the "fishbowl" window in place and keeps a liquid-tight closure. Two ventilation ports in back keep air coming in . . . and keep the window fog free. And, look at that window! 20"wide, 12½" high and .040" thick. Over half the circumference of the hood is window!

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Eye-Savers Defined

As defined by American Standard Safety Code for Head, Eye and Respiratory Protection Z2.1-1959.

Face mask. A device worn in front of the eyes and a portion of or all of the face, whose predominant function is protection of the eyes and face.

Helmet. A device worn by a person to shield the eyes, face, neck and other parts of the head.

Hood. A device that completely covers the head, neck and portions of the shoulders.

Spectacles. A device patterned after conventional type spectacle eyewear but of more substantial construction, either with or without sideshields, and with clear, impact-resistant filter or corrective lenses of glass or plastic.

Sideshield. A device of metal, plastic, or other material hinged or fixed firmly to the spectacle lens frame to protect the eye from side exposure.

Shield. A device to be held in the hand, or supported without the aid of the operator, whose predominant function is protection of the eyes and face.

Protector. A device that provides head, face, eye or respiratory protection against the hazards of processes encountered in employment or in the natural environment.

Eye Hazards Hit Home

Industrial-type hazards to vision have jumped the fence and are now widespread throughout the community. Users of power lawn mowers and home workshop tools need eye protection as much as factory workers.

More than 9 out of 10 of the 1,000 occupational eye injuries occurring each day are needless and preventable. Eye injuries can't be stopped by gazing into a crystal ball and trying to guess which worker might get hit in the eye.

Gate-to-gate eye protection is the only proved and economically sound method of freeing workplaces of the threat of blindness.



In this drilling operation, goggles will play a large part in conserving the worker's eyesight.

Goggles. A device with contour-shaped eyecups or facial contact with glass or plastic lenses, worn over the eyes and held in place by a headband for the protection of the eyes and eye sockets.

25¢ WINDSOCKS KEEP HEADS WARM



Snug, warm stocking cap for men who wear hard hats in winter. Stockingette weave easily expands to any head size. With Windsocks there's no time lost installing permanent type liners.

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SECTION 6

PERSONAL PROTECTION Part 2

IN SECTION 6:

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Hands and Arms 174

New Standards Needed For Safety Clothing

By CHARLES W. WYMAN



Charles W. Wyman is a senior staff engineer at Western Electric. He was graduated from Southwest Missouri State College in 1926, and joined the company's staff as a chemical engineer the same year. Mr. Wyman has been industrial hygienist and safety engineer at the Hawthorne Works in Chicago since 1939. He is a member of the American Industrial Hygiene Association and past president of the Chicago chapter. Mr. Wyman has served the ASSE as its representative on ASA Committee Z2 for the revision of the *Safety Code for Protection of Heads, Eyes, and Respiratory Organs*. He is the Telephone Group's representative on ASA Committee Z41 — *Specifications for Protective Occupational Footwear*. He is also on the L18 — *Protective Occupational Clothing* Committee. Mr. Wyman is a member of the Western Society of Engineers and the ASA's Safety Standards Board.

FUNDAMENTALLY, places of employment must be made safe for the worker by the application of good engineering practices and safety standards. Personal protective equipment should never be considered a substitute for good engineering, intelligent supervision, and a careful worker!

Such items as gloves, aprons, special clothing and protective footwear are only a secondary line of defense against minor hazards impractical to control by other means.

When such equipment is needed to protect the employee, a safety-conscious employer furnishes it without charge.

Supervision must take the responsibility of seeing the necessary items are properly fitted and worn . . . as well as maintained and replaced when necessary.

From the viewpoint of the employee and the employer, protective equipment best suited for any job should:

1. Give the needed protection and be the most comfortable to wear.
2. Offer minimum interference with motion and dexterity.
3. Afford the longest wear compatible with cost.
4. Be the easiest to dispense, maintain, and salvage.



Many authorities agree that present standards for protective clothing leave much to be desired. Most of them are American War Standards originated during 1944 and 1945, when it was necessary to conserve strategic and critical materials.

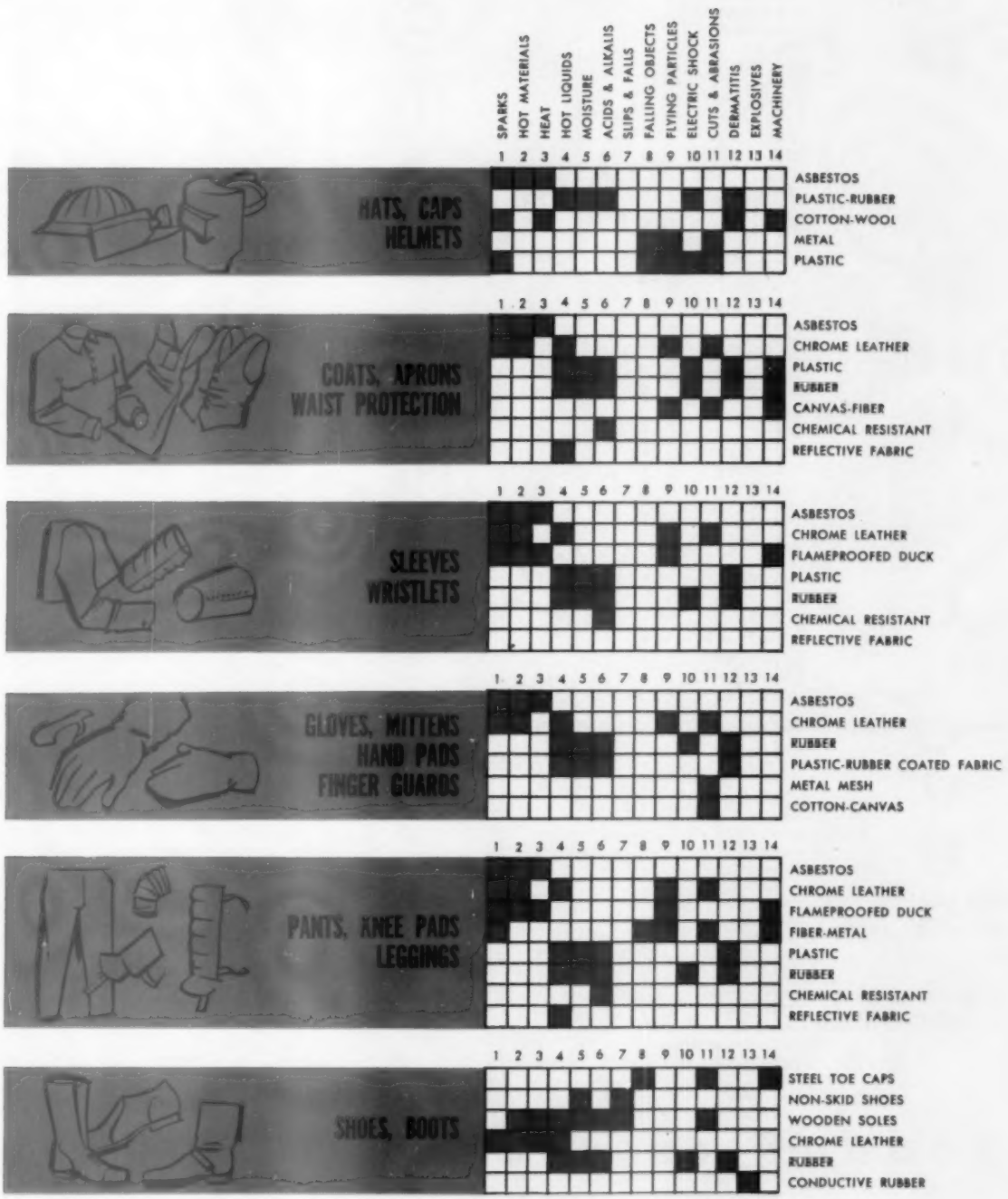
During the past 15 years, better materials have been developed and improvements made in design and construction which make these old standards of questionable value. When equipment is purchased without benefit of standards or specifications, price can become the prime consideration. If the manufacturer should compromise on design, quality of materials or workmanship to reduce his cost, then price items can prove expensive.

Adequate standards for personal protective equipment and clothing will come only when safety engineers and purchasing agents fully appreciate the need for them.

At Western Electric, it is normal practice to obtain the approval of safety engineers to the conclusion of any purchase commitment for protective equipment and clothing to assure that adequate quality is maintained as the primary consideration in the selection of safety products.

Selecting Safety Gear?

This chart will help you pinpoint choice of equipment



COATED FABRIC GLOVES

Physical Properties	Neoprene	Vinyl Plastic	Rubber Coated	Plastic Coated
Abrasion Resistance	G	E	G	E
Cut Resistance	E	P	E	P
Dry Grip	G	E	E	E
Finger Dexterity	F	E	G	G
Flexibility	G	E	G	G
Heat Resistance	G	P	E	F
Puncture Resistance	E	G	E	E
Snag Resistance	E	G	E	E
Wet Resistance	F	G	G	F
CHEMICAL RESISTANCE				
Acids, Inorganic				
Chromic	E	E	P	G
Hydrochloric 10%	E	E	G	E
Hydrochloric 38%	E	E	G	E
Hydrofluoric 48%	G	G	E	G
Nitric 70%	P	F	P	F
Nitric 10%	G	E	F	E
Sulphuric 98%	F	G	P	G
Sulphuric 10%	E	E	E	E
Acids, Organic				
Acetic	E	E	E	E
Citric	E	E	E	E
Formic	E	E	E	E
Tannic	E	E	E	E
Alcohols				
Butyl Alcohol	E	E	G	E
Ethanol	E	E	G	E
Glycerine	E	E	G	E
Isopropanol	E	E	G	E
Methanol	E	E	G	E
Caustics				
Ammonium Hydroxide 38%	E	E	E	E
Potassium Hydroxide 50%	E	E	E	E
Sodium Hydroxide 50%	E	E	E	E
Hydrocarbons				
Benzene	G	F	P	F
Coal Tar Distillate	E	G	P	F
Stoddard Solvent	G	G	P	F
Styrene	F	G	F	G
Toluene	F	F	P	F
Xylene	F	F	P	F
Ketones				
Acetone	E	F	E	F
Methyl Ethyl Ketone	G	P	F	P
Methyl Isobutyl Ketone	G	P	F	P
Solvents Chlorinated				
Carbon Tetrachloride	G	F	F	F
Perchlorethylene	G	F	P	F
Trichlorethylene	G	F	P	F
Solvents Petroleum				
Kerosene	E	E	F	G
Mineral Thinner	E	E	F	G
Naphtha	E	E	F	G
White Gasoline	G	E	P	G
Miscellaneous				
Acrylonitrile	E	E	E	G
Aniline	E	E	E	E
Animal Fat	E	E	G	E
Battery Acid	E	E	G	E
Carbon Disulfide	P	F	G	P
Creosote	G	G	F	G
Cutting Oil	E	E	F	E
Dyestuffs	E	E	E	E
Formaldehyde	E	E	E	E
Hydraulic Fluid	E	E	F	E
Insecticides	E	E	F	E
Lacquer Thinner	F	G	P	F
Linseed Oil	E	E	P	G
Paint & Varnish Removers	F	F	P	F
Penta	G	E	F	E
Phenol	E	G	G	G
Printing Ink	E	E	F	E
Soya Bean Oil	E	E	F	G
Steam	E	E	E	E
Turpentine	G	E	F	E
Vegetable Oil	E	E	G	E

E—Excellent; G—Good; F—Fair; P—Poor

Chart by Glove Division Riegel Textile Corp.

Gloves Are Cheaper

. . . than hands

By ROBERT B. MEDVIN
Industrial Glove Promotion Manager
Riegel Textile Corporation

Work gloves are still one of the most effective safety aids available to industry. However, a glove must be correctly constructed, and selected, if it is to do the job it was designed to do – and it must be comfortable to wear, or else it will not always be worn when it should be worn. A basic amount of technical information is needed by you responsible for selecting work gloves –you must know what to look for if you are to get the right glove.

For instance, heat has always been a major menace to hand safety. Burns account for a large proportion of injuries that the wearing of gloves could reduce, if not eliminate entirely. Hot mill gloves are designed to protect hands against *radiated* heat. Most true hot mill gloves are made of napped canton flannel material in 24-oz and 30-oz weight combinations. The thicker the glove, the more insulation it offers. As the flannel is usually made in a 12-oz weight–fabric weight is determined by how much a piece of cloth 34-in. wide and one yard long would weigh – a 24-oz glove is made by quilting (sewing) or laminating two 12-oz layers of fabric together. Similarly, a 30-oz glove is a joining of two 12-oz fabrics plus one additional 6-oz layer.

When the outer layer of fabric is worn through, the glove should be discarded, even though it still seems to offer protection. When the outer layer is worn, it forms a hole in the glove. This is a certain hazard–the hole can snag, or catch and hold burning particles of hot metal. For this reason many selectors are turning to a new development in hot mill gloves. This is the 18-oz fabric woven in the full

HIGH VISIBILITY "U.S." YELLOW FOR SAFETY

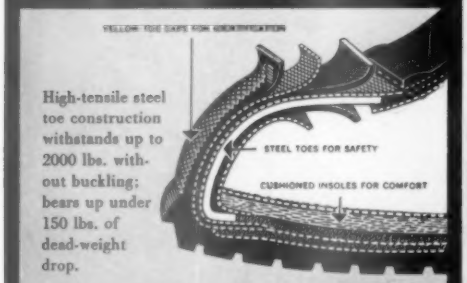
scientifically engineered protective clothing for all industry



Steel-toe lace workshoe. Terre Haute mining boot. Both with safety-yellow toe caps.



Steel-toe short boot with safety-yellow toe cap.



High-tensile steel toe construction withstands up to 2000 lbs. without buckling; bears up under 150 lbs. of dead-weight drop.



MRC 217
Safety-yellow Brunswick general-purpose coat of nylon U. S. Fiberthin.

MRJ 797
Safety-yellow Peerless jacket and overalls of "U. S."-treated Neoprene.

Two labels to look for when you're in the market for high-visibility safety with practical comfort and longer wear. 1. *U. S. Tempered Rubber*, the specially toughened rubber formulation that gives "U. S." safety-toe shoes and boots at least ⅓ longer wear. 2. *U. S. Industrial Raynsters®* in Fiberthin® or Neoprene. Where lightweight durability is a consideration you'll probably wish to specify U. S. Fiberthin, the new protective material with twice the strength and half the weight of the best conventional material. And for top value in meeting protective problems involving acids, oils, chemicals, you'll want to look into "U. S." special way of treating fabric, outside and inside for maximum protection, with Neoprene. Call your jobber for information on these and other great U. S. Rubber products, safety-engineered in our research laboratories to meet the special requirements of all types of industrial and public service work.

United States Rubber

Rockefeller Center, New York 20, N.Y.

CIRCLE 89 ON READER CARD

WE'RE NEVER SATISFIED WITH



SUCCESS! Runaway best-selling safety shoe of the year: Lehigh's 6-inch general duty work shoe in plump, soft, glove leather with Neoprene cushion crepe wedge bottom. Stock No. 1341.



NEW! The nearest thing to rubber boots ever developed in leather: Lehigh's own Vulca-Sealed process ends seepage at the critical seam between water-repellent upper and cushion crepe sole. Left, No. 1206; right, No. 1205.



NEW! Until now it has been impractical to use color in rubber safety footwear without seriously affecting durability. Lehigh has licked that with new THOR-KOTE—offers a complete line of rubber styles in a broad range of color. This is Stock No. 110, black with bright yellow.

NEW 16 PAGE "COMIC-BOOK" PAY-STUFFER!

Tells the foot-safety story in comic-book style that every employee will read from cover to cover. FREE in any desired quantities to cover your payroll.



LEHIGH SAFETY SHOE COMPANY, EMMAUS, PA.

CIRCLE 97 ON READER CARD

THE STATE OF FOOT SAFETY!

We are probing continuously, seeking new and better constructions . . . ideas that will improve wear, looks or acceptance. Here are just a few that will set the pace for the industry in 1961. See them . . . and many more at



NEW! 8-inch version of our top-selling 6-inch "Chemaster" work shoe with both sole and upper leather amazingly resistant to chemical corrosion — even powerful acids and alkalis. Stock No. 1932.



NEW! For the executive or foreman who resists the conventional round-toe safety shoe style, Lehigh introduces a brand new steel box toe—tapered and styleful as the smartest of regular street shoes. Stock No. 1826.

BOOTH NO. 16

GREATER NEW YORK SAFETY EXPOSITION

HOTEL STATLER

APRIL 10-14

LEHIGH Safety Shoe Co., Emmaus, Pa.
Please send at once, full details on Stock No. .....
Sample copy "Perils of Pete" ☐ *Complete catalog* ☐

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or, if you're not coming to the New York Show, mail this coupon now for new Lehigh literature including these new items and 71 other styles.

CIRCLE 97 ON READER CARD

CIRCLE 143 ON READER CARD

IPCO

SAFETY APRONS



Vinylite Aprons protect against acids, oils, solvents and caustics

BIBS AND SLEEVES

Safety Sleeves in vinylite and selected materials for arm protection



ASSURE PROTECTION



Welders' Aprons in chrome leather, asbestos, fire-proofed duck

AND WORKER COMFORT

Light Duty Bibs and yellow neoprene coated aprons, synthetic rubber coated cotton



Light in weight, flexible and comfortable to wear . . . there's an IPCO safety apron to meet all job requirements, protect the worker from specific job hazards. IPCO supplies a complete line of protective clothing for head-to-toe protection for your workers—in the plant or in the field. Write today for complete data and prices.

IPCO Reg. U.S. Pat. Off. 9-1012

SAFETY PRODUCTS

INDUSTRIAL PRODUCTS COMPANY

2850 N. Fourth St. • Phila. 33, Pa.

thickness without the need of laminating or quilting. Used as the outer layer, it provides longer safe wear because it offers a full 18 ounces of facing before wearing through.

An important feature of any hot mill glove is that it is full cut and fits loosely so the wearer can immediately sling it off should a hot spark accidentially drop into the glove. To aid this type of emergency removal the glove should have a non-restricting band-top or gauntlet cuff.

Welding is another operation that requires protection against heat, as well as flying sparks and metal flow. In order to know what to look for in a welder's glove you must understand how heat protection is provided. The thickness and quality of the leather is one factor; heat repelling linings are another. In addition, extra roominess is important because the air space it provides also serves to insulate. Thick leather is fire retardant and does not burn as easily as other glove fabrics when exposed to heat or contact with sparks. Wool content linings should be used to protect the back of the hand and cuffs when extra protection is needed.

The first thing to look at is the leather itself. It should be best grade and heavyweight – usually flesh-split cowhide or horsehide. It must be specially tanned for protection against heat and shrinkage. Special tanning is often distinguished by the resulting green color –however, all green leathers are not necessarily specially tanned, and this should be checked with your source.

The next thing to note is the welting. All true welders' gloves are fully welted. A welt is a piece of material, usually leather, sewn in between the seams. It crushes down between the fabrics when seamed together. The purpose is to protect the seams from burning metal sparks which would burn exposed seams in two, destroying the glove, and exposing the hand to severe burns. Welts are especially important in the "danger angle" where the thumb seam meets the closing seam. Other danger areas are over the index finger to the

—To page 189

CIRCLE 144 ON READER CARD

NEW SINGER SAFETY SHIELD



In the plant or on the job

★ LIGHTWEIGHT ★ RUST-PROOF
★ LOW COST ★ FIRE-RESISTANT
★ ASSEMBLED OR TAKEN APART IN MINUTES WITHOUT TOOLS

Just think of it—no hooks, no bolts, no screws. Ideal for welding, grinding, machining etc. or can be used straight line as a protecting divider. Rust-proof steel frame with heavy fire-resistant duck curtain—attaches in seconds with with heavy duty snap fasteners.

In 4 standard sizes:
18" x 42", 36" x 48", 36" x 60", 36" x 72"

NEW BIG CATALOG
Describes screens in detail. Complete line of work gloves, welding gloves and safety clothing.

Ask your dealer or write: Special Products Division

SINGER GLOVE MFG. CO.
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THE KENNEDY "VICTORY" CAP

designed for GREATER SAFETY for all industrial Jobs!



Better protection for all the hair all the time because the full, wide, snood-type back of the Kennedy "Victory" Cap permits complete coverage. Easy to put on. Adjustable to all head sizes. 11 styles to choose from.

Manufacturers and distributors of a complete line of safety clothing and equipment.

Write for information regarding your needs.

K-I KENNEDY-INGALLS, INC.
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CIRCLE 142 ON READER CARD



Men work safer in "SCOTCH·SHIELD" suits!

ALUMINIZED FABRIC

Protective garments made of "Scotch·Shield" Aluminized Fabric are available from leading safety clothing manufacturers. Full suits, coats, aprons, leggings, hoods, gloves, etc., can be ordered in the following types of durable fabric coated with aluminum to reflect 90% of radiant heat:

TYPE 73
Asbestos, cotton, glass cloth combination. Meets MIL-C-8240A (USAF).

TYPE 75
Underwriters Grade asbestos, 1.2 lbs., with herringbone weave.

TYPE 82
High strength, lightweight, flameproof rayon cloth. Very flexible.

TYPE 85—NEW
Superior protection against metal splash.

Check with your safety clothing supplier for the fabric best suited to your needs. For illustrated literature, write the 3M Company, St. Paul 6, Minnesota.

SCOTCH·SHIELD® BRAND ALUMINIZED FABRIC

MINNESOTA MINING AND MANUFACTURING COMPANY

3M COMPANY

. . . WHERE RESEARCH IS THE KEY TO TOMORROW

"SCOTCH·SHIELD" IS A REGISTERED TRADEMARK OF THE 3M COMPANY

CIRCLE 101 ON READER CARD

Clothing for Work

Some of the oldest fabrics, and many of the new, are useful in protecting against job hazards

JOBS IN MODERN industry require a variety of clothing to permit the worker to perform his tasks safely.

Work clothing includes dungarees, coveralls, overalls, work shirts and work pants. These may be garments more durable than those for casual or dress wear, or highly specialized garments made of fabric to resist specific exposures such as heat or acids.

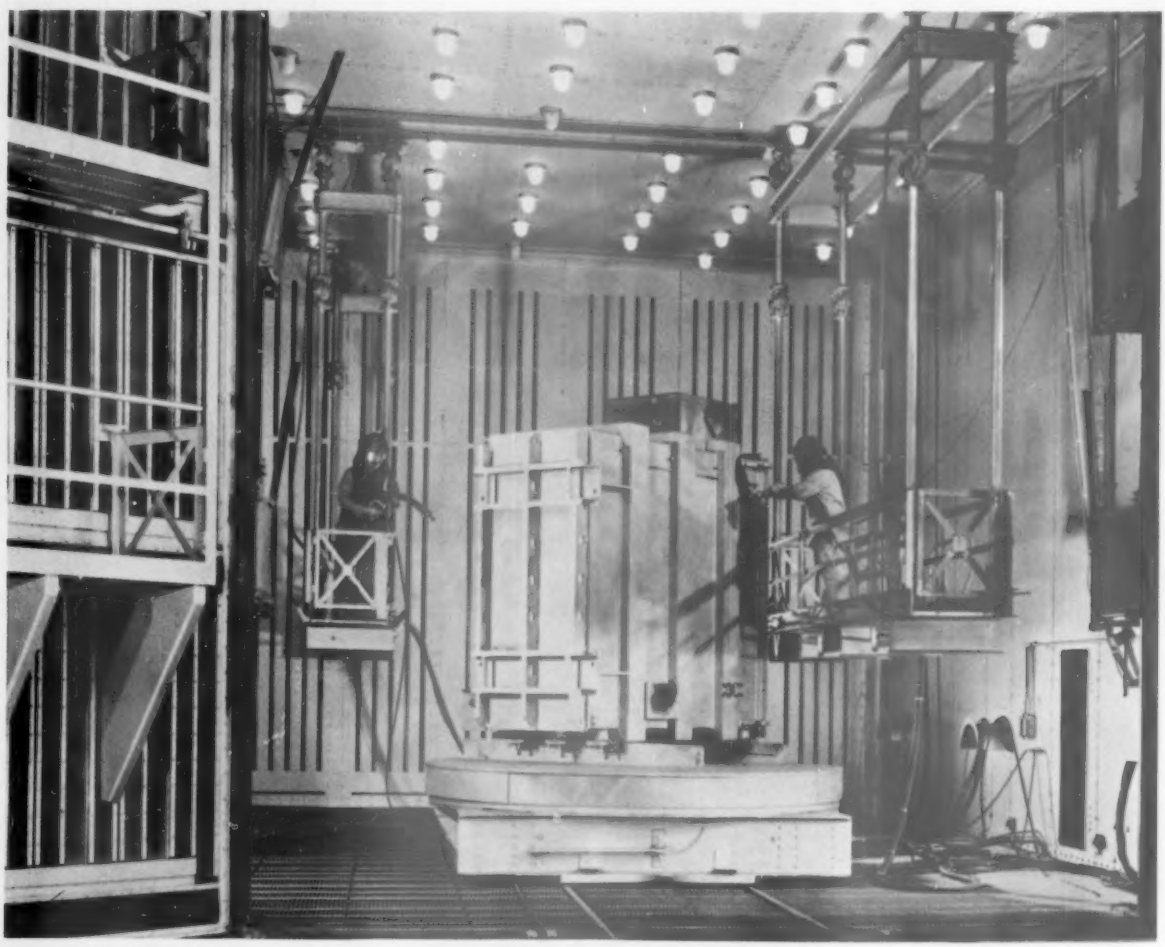
Generally, work clothing should provide:

1. Adequate protection for the job exposure.
2. Comfort and freedom of movement.
3. Durability.
4. Appearance.

Good design and fitting are essential in all work garments. Long, loose sleeves may get caught in machinery. Trouser cuffs may cause tripping.

Good styling has a particular appeal to women, but men like it too. Clean clothing is an aid to morale as well as to health and safety. Garments soaked in oil or flammable solvent ignite easily. Organic solvents, flammable or nonflammable, may cause skin irritation.

Specifications established by the federal government for civil and military operations are available to private industry. During World War II a series of war standards was put



Shotblasters, dressed for the job, prepare a transformer for paint.

Case History No. 111

A Southern Steel Manufacturing Plant

"GREEN GIANT™ GLOVES BY RIEGEL LAST 50% LONGER ...END DANGEROUS WORK HABITS"



Green Giant gloves hold hot tool which feeds cotton tie to hoop mill strander.



Here Are The Facts!

COMPANY: A Southern Steel Manufacturing Plant

GLOVE PREVIOUSLY USED: Competitor's 24-oz. Hot Mill

GLOVE NOW USED: Riegel Green Giant Hot Mill 43121F (band top) and 43741F (Gauntlet), both with one-piece-woven 18-oz. top layer plus extra 6-oz. protective layer.

SAFER at LESS COST: "To save money, men used former glove with holes worn in top layer . . . holes that snagged or let in hot chips. Green Giant's heavier top layer ended this bad habit, gave 50% more wear at less cost."

COMFORT: "Men prefer the easy-to-get-off fit and soft flexibility, plus extra heat protection, of Green Giant."

Here is another saving made possible because Riegel Industrial Analysts fit the right glove to the job. For help in reducing your glove cost, call or write Riegel today.

Write for valuable

FREE GLOVE GUIDE

A wealth of information: styles, types, materials, chemical resistance, case histories, and more.



Riegel

Glove Div. • RIEGEL TEXTILE CORP. • Conover, N. C.

SALES OFFICES AND DISTRIBUTORS IN PRINCIPAL CITIES

CIRCLE 92 ON READER CARD

CIRCLE 228 ON READER CARD

Check the original

QUICK RELEASE BUOYANT WORK VEST

for Better Design, Performance, Safety



FLOATS WEARER VERTICALLY—pads support chin and back of head out of the water.

QUICK RELEASE ROD pulls out easily, disengages all fasteners.

HANDY BELT SNAP prevents vest from floating off wearer.

LIGHT, NOT BULKY—just 34 oz., vest is only 1¼" thick.

CAN BE LAUNDERED like work clothes. Vinyl plastic unaffected by most oils, acids, or perspiration and it is odorless.

For details and prices write:

SAFETY FIRST SUPPLY COMPANY

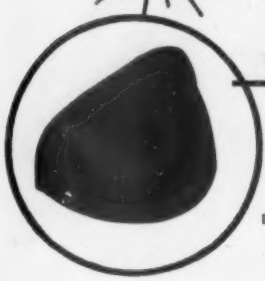
425 Magee Street, Pittsburgh 19, Pa.

. . . AND IT FELL ON HIS COMPROMISE

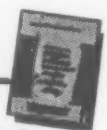


The finest in foot protection is a pair of safety shoes, but you probably have at least one man in your plant who doesn't wear them.

For him the best compromise is StaSafe Toe Clips, impact resistant steel clips that can be permanently nailed or temporarily fastened directly to his work shoes. Lightweight and low cost StaSafe Toe Clips combine comfort with protection.



Write in Today for Toe Clip Bulletin



Standard Safety Equipment Co.

431 N. QUENTIN ROAD • PALATINE, ILLINOIS

13 HECKEL ST. BELLEVILLE 7, N.J.

855 EAST 152nd ST. CLEVELAND 10, OHIO

12921 W. WASHINGTON BLVD. LOS ANGELES 66, CALIF.

CIRCLE 229 ON READER CARD

into effect. Some of these are being revised to include developments in this field. Many large companies have established their own specifications for various items of work clothing.

Products of the leading manufacturers meet high standards of workmanship, materials, and protection for specified hazards. Their representatives can be extremely helpful in selecting equipment and planning programs. It is usually advisable to deal with more than one supplier.

Job Exposures

Safety clothing. Exposures requiring the use of special garments include:

1. Heat — molten metal splashes, sparks, fighting fires, radiant heat.
2. Corrosive materials, solvents.
3. Low temperatures.
4. Flying objects.
5. Cuts, abrasions, and bruises from sharp or rough edges.

Heavy-Duty Clothes

Cotton and wool are the traditional materials for work clothes. In recent years a variety of synthetic fibers has been added to the available materials. Many of these excel the natural materials for certain uses.

Cotton is available in a variety of weights and weaves. Most useful of these is duck. It can be flameproofed or made water resistant. It is used as a backing for rubber, neoprene, or plastic films. It is aluminized for garments used for protection against radiated heat.

Modern flameproofing methods have made cotton fabrics suitable



Wool trousers and shirt, chrome leather gloves, and heat mask. (Mine Safety Appliances Co.)



NEW "ULTRAPRENE" SAFETY SOLE

- Long-wearing Neoprene
- Non-marking
- Oil-resistant
- Safety plate Design

Available in black, brown and neutral.

14 Iron reduced shank

Samples upon request



Manufactured by

QUABAUG RUBBER CO.

NO. BROOKFIELD, MASS.

CIRCLE 93 ON READER CARD

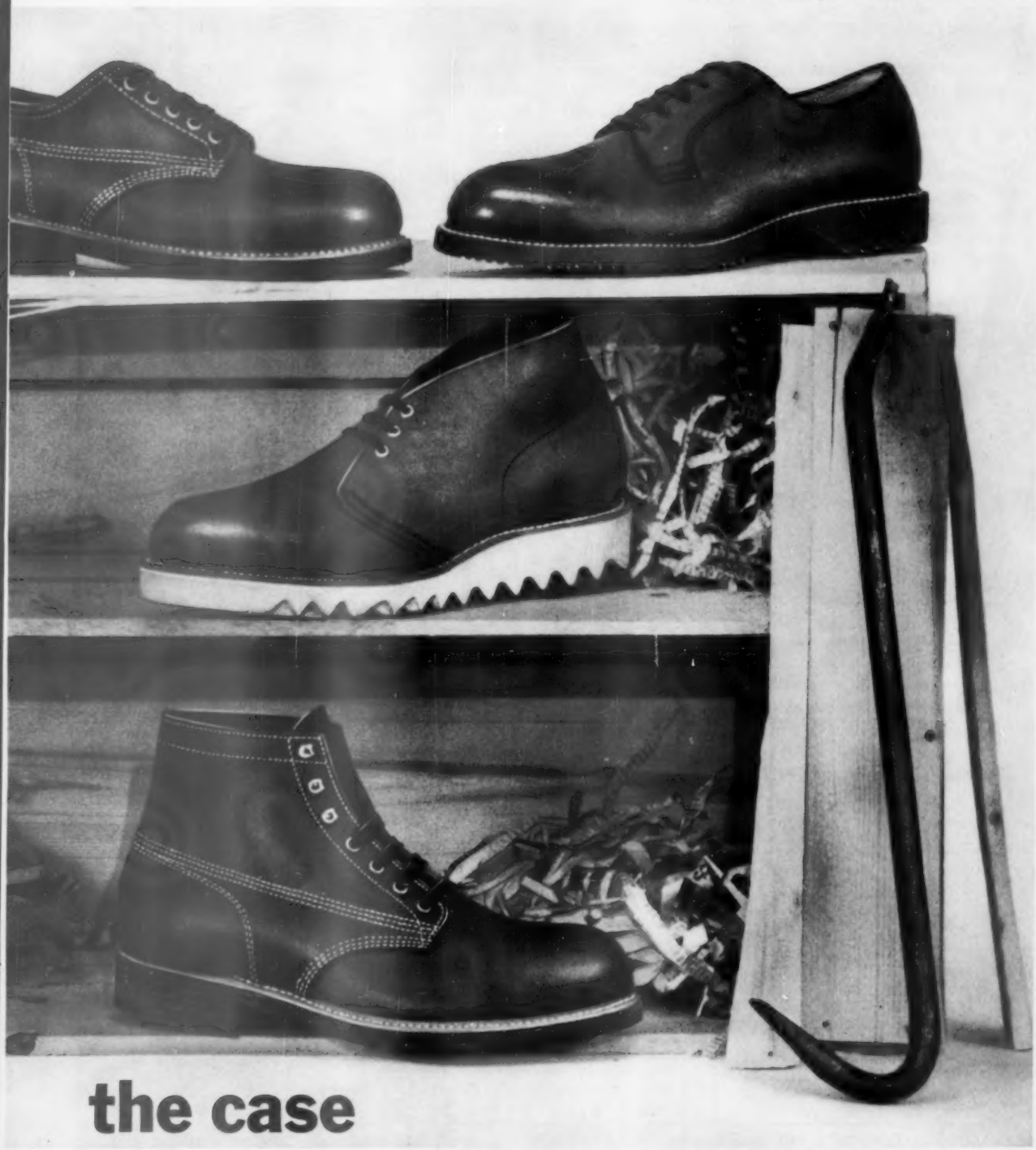


Safety by

Eight brand new additions to Thom McAn's comprehensive safety-shoe line. Each style has its own special safety features. Each has a leather-lined steel toe-box. Each exemplifies the careful workmanship that makes Thom McAn safety shoes such a buy.

Top row (*left to right*): (1) Cool, ventilated safety oxford with famous Thom McAn dress-shoe styling. Tough, butyl leather outsole made to military specifications. Neoprene® heel. B 8-12; C 7-12; D, E, EE 6-12. Style S-4357. (2) Sturdy, russet, plain-toe oxford with tire-cord sole and heel to prevent skids. D 6-12, EE 6-12. Style S-4381. (3) Vylyt®-soled, Quilon®-tanned amber glove-leather oxford. Exceptionally lightweight and flexible. Resists abrasion, acids and grease. C 7-11; D, E 6-12; EE 6-11. Style S-4382.

Center row: (1) Dacron®-stitched, Tyrolean oxford of spice-tan glove leather. Rawhide laces, sweat resistant inner-sole, Neoprene-crepe outsole. D 6-12, EE 6-12. Style S-4368. (2) Spice-tan, glove-leather chukka boot with shock-absorbing, grooved, wedge sole-and-heel.



the case

Built-up inner-sole to support and cushion the arch. D, EE 6-12. Style S-4399. **Bottom row:** (1) Handsome cordovan color blucher. Dress-shoe style and weight. Storm welt, black Neoprene-crepe sole and heel. C 7-11, D 6-12, EE 6-12. Style S-4389. (2) Women's white leather, nurse's style safety oxford with comfortable Neoprene-crepe sole and heel. N 5-10, M 4-10, W 5-10. Style S-9. (3) Six-inch plain-toe blucher in soft, russet glove leather with long-wearing, skid-preventing, tire-cord sole and heel. D 6-12, EE 6-12. Style S-4113.

SAFETY SHOES

Thom McAn

A DIVISION OF MELVILLE SHOE CORPORATION

CIRCLE 94 ON READER CARD

Thom McAn Safety Shoe Division
25 W. 43 St., N. Y. 36

Gentlemen: Please send me the following at once:
(Check service required)
☐ Details of Thom McAn's sales plans
☐ Illustrated list of Thom McAn Safety Shoes
☐ Set of safety posters

NAME POSITION

FIRM

ADDRESS

CITY ZONE STATE N

for many occupations which formerly required heavier garments of chrome leather or asbestos.

Wool offers excellent protection against heat and cold. It is used for lining asbestos garments. It is resistant to sparks and molten metal splashes and will not support flame.

Synthetic fabrics are resistant to rot, mildew, insects, sunlight, moisture, and a wide range of chemicals. Most of these fibers will char when exposed to flame but are either slow-burning or will not support combustion. Synthetic materials vary widely in their characteristics, and the manufacturer should be consulted about specific exposures.

Most widely used for work clothes are the acrylic fibers, Dynel and Orlon. Among the largest users of these materials are chemical plants, where daily contact with acids and caustic solutions causes rapid deterioration of organic fibers.

A problem in many industries is to find materials that will stand the vigorous laundering needed to remove grime and chemical and the wear and tear while being worn. Here synthetic fabrics have proved their value.

Atomic energy installations make severe demands on work garments which must be washed frequently in strong decontamination chemicals. Acrylic fibers have shown exceptional endurance to this treatment.

Water repellency and spot and stain resistance can be increased by a silicone finish. This reduces the amount of cleaning needed.

Anti-static finish. In the past, synthetic fibers have been barred from locations where static electricity is a hazard. A recently developed process has made it possible to make Dynel highly conductive. This process is said to withstand repeated launderings. With some other fibers, treatment with an anti-static agent in each laundering will minimize the static hazard.

The finish repels dust and lint and is said to be easy to decontaminate after radioactive exposure.

Impervious materials of many types provide protection against dust, vapors, moisture, and corrosive liquids. They are useful in handling materials which would cause burns or dermatitis. This type of material includes rubber, neoprene, and vinyl films and fabrics coated with them.

Rubber resists acids, caustics, and other corrosive substances, as well as moisture. Garments of rubberized fabrics are used when handling low concentrations of acids and non-caustic liquids and for protection



Acid hood of vinyl plastic protects against sprays of acids, caustics, corrosive liquids, or gasoline. (Mine Safety Appliances Co.)

PWC YANKEE SAFETY CORDS



Underwriters' Laboratories Listed Yellow Safety Cords

Designed for safety in hard and extra hard usage applications for industrial, institutional, municipal and public utility organizations where safety is important. The bright yellow jacket is easily distinguished and can be personalized with surface printing. An oil-proof compound is used on both the conductor insulation and the overall jacket. Yankee Safety Cord is U/L labeled for use immersed in oil in sizes 18 through 10 AWG and water resistant in sizes 8 through 2 AWG. The compound does not support combustion and is non-marking.

AWG Size	OUTSIDE DIAMETER IN INCHES 2 Conductor	3 Conductor	4 Conductor
TYPE SJT 300 VOLTS OIL-PROOF			
18	.30	.33	.36
16	.32	.35	.39
*14	.46	.48	.53
TYPE ST 600 VOLTS OIL-PROOF			
18	.38	.39	.42
16	.39	.42	.47
14	.52	.55	.59
12	.59	.63	.67
10	.64	.68	.74
TYPE ST 600 VOLTS WATER RESISTANT			
8	.81	.85	.96
6	.95	1.00	1.12
4	1.10	1.16	1.30
2	1.29	1.34	1.52

*Not U/L Listed

PWC PLASTIC WIRE & CABLE CORPORATION
JEWETT CITY CONNECTICUT

CIRCLE 95 ON READER CARD

SAFETY INSURANCE

Biltrite Safety Soles protect against more hazards . . . more comfortably. They are lighter, tougher . . . specially compounded for both safety and durability.



BILTRITE SAF-T-STEP NEOPRENE CORK SOLES

- The one Neoprene Cork Sole that does not compromise wear for weight
- Resist oil, grease, chemicals and acids



BILTRITE NYLON CORD NEOPRENE SOLES

- Rugged — greater abrasion resistance
- Added resistance to oil, grease, acids and chemicals



BILTRITE SUPER-LITE CORK SOLES

- Resist abrasion from gravel, metal filings, etc.
- Lightweight resilient . . . insulate against heat, cold and shock



BILTRITE SURESTEP NEOPRENE SOLES

- Resist oil, grease, chemicals, acids
- Extra rugged for long-wearing service



BILTRITE TRU-GLIDE NEOPRENE SOLES

- Provide extra traction and gliding comfort
- Resist oil, grease, acids and chemicals

BILTRITE HEELS AND SOLES

AMERICAN BILTRITE RUBBER COMPANY
CHELSEA 50 MASS

Warehouses: 4464 District Boulevard, Los Angeles — 1010 Gratiot Street, St. Louis In Canada: American Biltrite Rubber Co (Canada) Ltd., Sherbrooke, Que.

FROM THE WORLD'S LARGEST PRODUCER OF SHOE SOLING MATERIALS

CIRCLE 96 ON READER CARD

21 PIONEER GLOVES COMBAT

CHEMICALS!

There's a Pioneer glove to protect workers from chemicals, chemical burns or hand dermatitis. Of the 59 Pioneer Glove styles, 21 are designed to give long service in at least 103 basic oils, greases, acids, solvents and other chemicals. This includes all of the long-wearing Milled Neoprene Pioneer styles that bear this recognized Pioneer trademark.

STANZOIL PIONEER



PIONEER

The Pioneer Rubber Company, 237 Tiffin Road, Willard, Ohio

5 PIONEER GLOVES COMBAT FATIGUE,

HEAT, COLD!

When the worker calls for hand comfort, you call for one of the 5 Pioneer lined, liquidproof glove styles. They're lined against temperature extremes and coated with neoprene or Pylox™ against liquid penetration. See these and 54 other glove styles in your free copy of the Pioneer Industrial Glove Catalog. For your free copy write . . .



PIONEER

The Pioneer Rubber Company, 237 Tiffin Road, Willard, Ohio

CIRCLE 104 ON READER CARD

9 PIONEER GLOVES PROMOTE

PRODUCT CARE!

To keep work rolling when the product needs protection from handling, use Pioneer Nimble Fingers™ or Sheergrip® Gloves. Styles in neoprene, latex or Pylox™ blend dexterity with durability in the right degree for your job. Selection is easiest from the Pioneer Industrial Glove Wall Chart (all 59 styles). For your free copy, write...



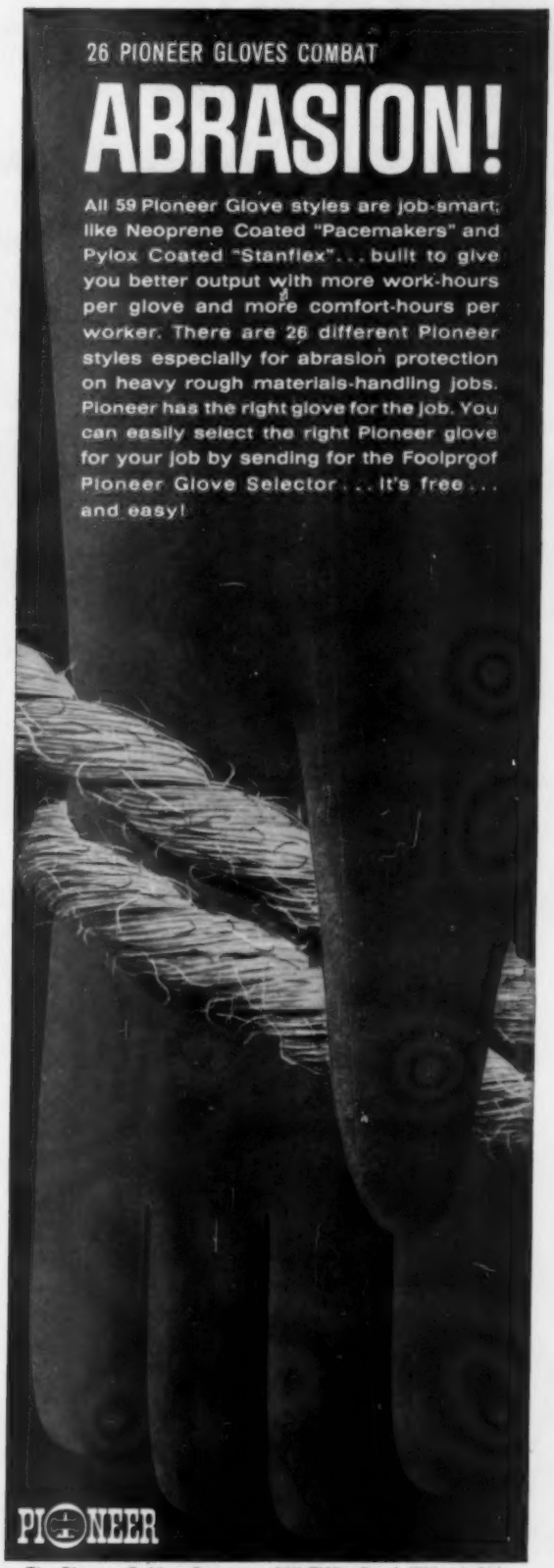
PIONEER

The Pioneer Rubber Company, 237 Tiffin Road, Willard, Ohio

26 PIONEER GLOVES COMBAT

ABRASION!

All 59 Pioneer Glove styles are job-smart, like Neoprene Coated "Pacemakers" and Pylox Coated "Stanflex"... built to give you better output with more work-hours per glove and more comfort-hours per worker. There are 26 different Pioneer styles especially for abrasion protection on heavy rough materials-handling jobs. Pioneer has the right glove for the job. You can easily select the right Pioneer glove for your job by sending for the Foolproof Pioneer Glove Selector... it's free... and easy!



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The Pioneer Rubber Company, 237 Tiffin Road, Willard, Ohio

CIRCLE 104 ON READER CARD

BERT



FASHION SEAL

presents a complete line of Lint Free

ACID RESISTANT INDUSTRIAL UNIFORMS

*tailored of 100% Dupont Dacron**

CHECK THESE SAFETY FEATURES

- ✓ Resists deterioration by acids and chemical fumes.
- ✓ Lint free.
- ✓ Non-allergic.
- ✓ Resists dirt, grease, mildew, abrasion, micro-organisms.
- ✓ Non-combustible.
- ✓ Non-static finish.

Plus the additional advantages of washing ease, quick drying, lightweight, comfort, durability!



LABORATORY REPORT PROVES ACID RESISTANCE

Fashion Seal's Dacron* was put through a series of actual immersion tests in the following chemicals under varying temperatures and durations... with little or no loss of fabric strength! Sulfuric acid, aqua regia, hydrochloric acid, chromic acid, phosphoric acid, nitric acid, acetic acid, hydrofloric acid, sodium hydroxide, acetone and hydrogen peroxide.

FASHION SEAL will gladly send you a copy of this report if you desire it.

ALL FASHION SEAL DACRON* UNIFORMS ARE SEWN WITH DACRON* THREAD TO ASSURE DURABILITY AND STRENGTH.

Write for illustrated catalog of complete industrial apparel line.

CIRCLE 98 ON READER CARD

against weather. High dielectric strength makes it useful where electricity is used.

Neoprene, a synthetic rubber with many useful qualities, is widely used in safety equipment. It forms a tough durable film resistant to acids, solvents, and alkalis. It has high dielectric strength.

Vinyl plastic is resistant to moisture and a wide range of chemicals. It can be rolled or calendered onto fabric, or it can be used as a strong, pliable film without backing.

Water-repellent duck combines strength and durability with light weight. It is used in exposure to moisture and non-corrosive liquids.

For Hot Jobs

Fire-resisting garments include aprons, coats, coveralls, pants, hoods, leggings, spats, sleeves, gloves, mittens, and hand pads.

Materials commonly used are flameproofed duck, chrome leather, asbestos, and aluminized fabrics—asbestos, glass fiber, and duck.

Flameproofed fabrics. No fabric suitable for clothing can be made "fireproof," but these treated materials will not support combustion. They have proved practical for many operations, such as welding and foundry work.

Flameproofed garments are obtainable in most items used in industry. Some types of treatment will stand repeated launderings. Other compounds used in industrial and commercial laundries can be applied after laundering.

Flameproofed garments should be plainly marked, so untreated clothing will not be used by mistake.

Modern flameproofing methods have made cotton fabrics suitable for many occupations which formerly required heavier garments of

NEW *Lightweight* SAFETY SHOES for WORK, SPORT and DRESS

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Steel Toe RICO
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FLYWEIGHTS
SO *Light* YOU HARDLY KNOW YOU HAVE THEM ON!





Lightweight
VYLYT®
SOLE LOAFERS

No. R-31
Antique Brown Loafer.
Lightweight VYLYT Molded Sole and Heel. Full Cushion Insole.

NEW! VYLYT SOLE PROVIDES FIRM FOOTING ON ANY SURFACE!

LIGHTER • EXTREMELY FLEXIBLE • PRACTICALLY WEARPROOF!

Non-marking, oil and acid resistant.

FROM OUR LINE OF
"Flyweights"

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Dressy Black Calfskin. Neoprene Nitro-Crepe Sole and Heel. Full Cushion Insole.

No. R-27
Antique Brown. (Same as above)

See our highly styled
"FLYWEIGHT" LINE
(Size 8D Shoe Weighs Only 15 oz.)

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☐ PLEASE SEND US A COPY OF YOUR NEWLY ILLUSTRATED CATALOG (SHOWN ABOVE), FEATURING SAFETY SHOES AND RUBBER FOOTWEAR.

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Company_____
Address_____
City_____ Zone_____ State_____

RICO
RECORD INDUSTRIAL COMPANY
DEPT. SV, 3301 ARCH STREET • PHILADELPHIA 4, PA.

CIRCLE 99 ON READER CARD

chrome leather or asbestos. However, flameproofed cotton should not be used for the more severe exposures.

Chrome leather is designed for rough use, such as sandblasting and for protection from hot sparks and molten metal in arc welding. Metal sparks do not adhere readily to chrome leather. It is the most durable material for protective clothing, and the most expensive.

Asbestos, long used for protection against fire, is used for a variety of protective garments, ranging from hand pads to complete suits. It is particularly useful for gloves worn for handling hot objects.

Underwriters' grade of asbestos, rather than the commercial grade, should be used. Cloth used for garments and accessories contains 80 to 85 per cent asbestos and weighs about 2½ lbs. per square yard.

Aluminized fabrics owe their protective qualities to the thin aluminum coating that reflects 95 per cent of the radiant heat. This permits lighter and more flexible garments, allowing the wearer to work more freely and effectively. Underwriters' grade tropic weight asbestos can be used instead of the heavier material.

To provide oxygen for the wearer, self-contained breathing apparatus can be carried under the coat.

Aluminized garments are not recommended for exposure to direct or conducted heat. There is little heat dispersion, and the aluminum coating will melt under direct heat at high temperatures.

Aluminized garments designed for specific jobs are used in many industries, such as ceramic, metalworking, and petroleum, as well as for rescue work. These are available from several manufacturers and distributors.

Protection against impact. Most garments provide some protection against cuts, bruises, and abrasions. Aprons of padded leather, metal-studded leather, or metal mesh are worn to shield the abdomen and groin. Kickback aprons, worn by saw operators, have a fiber shield for protection against kickbacks.

Welder's clothing. Protective clothing is as much a part of the arc welder's outfit as his helmet. Ordinary cotton shirts and dungarees can be ignited quite easily. Garments of chrome leather or flameproofed duck can prevent serious burns.

Garments available include overalls, pants, chaps, aprons, jackets, sleeves, gloves, mittens, and spats.

Clothing should be of good quality material, solidly constructed. Fastenings must prevent gapping and should be so designed that the wearer can get out of the garment quickly.

There should be no turned-up cuffs or other projections to catch hot metal. Pockets should have flaps.

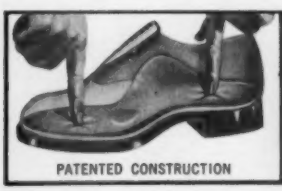
Laundry service. Laundered overalls, coveralls, aprons, smocks, and other garments are usually furnished by the employer where extreme cleanliness is required in plant processes or where toxic materials are handled. In many cities, industrial laundries provide complete service.



SAFETY STARTS HERE

WITH KNAPP SAF-TEST SHOES

Cost-conscious management knows Knapp Saf-Test Shoes keep men on the job. Unquestionably the finest shoes of their type, Knapp Safety Shoes provide extra durability, greater safety margin, handsome dress styling and Knapp's original, patented Cushioned Comfort construction. All Knapp Safety Shoes feature Austempered Steel Toe Boxes that meet the testing requirements of the American Standards Association. You get maximum protection and comfort! **For full information, write Saf-Test Dept., Knapp Brothers Shoe Mfg. Corp., Brockton 61, Mass.**



KNAPP SAF-TEST
Aerotred Cushioned
STEEL-TOE SAFETY SHOES

CIRCLE 100 ON READER CARD

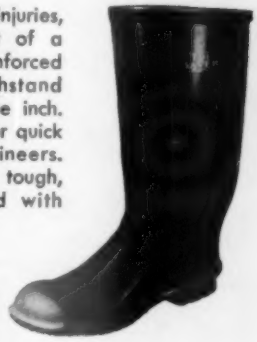
GOODALL

SINCE 1870

Safety PRODUCTS

The Goodall products described below are made to the highest standards for quality in materials and workmanship, with their safety features thoroughly proven in service to many industries. You can purchase them with complete confidence that they will fulfill their intended purpose to your entire satisfaction.

"TOE-SAVER" ® SAFETY BOOTS



Surest protection against toe injuries, with all the wearing comfort of a first-quality boot. Built-in, reinforced steel toe cap tested to withstand 2,000 lbs. pressure per square inch. Covered by a white toe cap for quick identification by Safety Engineers. This boot is made of smooth, tough, flexible black rubber, lined with heavy duck. A cushion insole adds to its comfort, and a tire-tread outsole guards against slipping on wet or greasy floors. Available in all boot sizes, in full hip, three-quarter and short.

"RUBBERHIDE" SAFETY INNERSOLES



Eliminate foot injuries resulting from punctures by nails and other sharp-pointed underfoot objects. Made with sheet of thin, high-tensile spring steel, inseparably bonded between layer of top-grade sole leather, and layer of rubberized canvas duck. Extremely flexible, light in weight, "easy to wear". In all rubber boot and boot-last shoe sizes.



"HARDBOILED" SAFETY HATS

FIBREGLASS OR ALUMINUM

The ultimate in head protection, yet light-weight and comfortable. Exceed highest established requirements for strength; heat, fire and moisture resistance; and dielectric tests. Wide range of colors.

"GOODSEAL" SAFETY GLOVES



Made of a special rubber compound that withstands constant contact with virtually all solids and solutions. Smooth, flexible, and highly resistant to snagging and puncturing. "Goodseal" Gloves are available in light, medium and heavy weights, some styles having turned-up cuffs to keep chemicals and acids from arms and clothing.

PROTECTIVE SUITS, COATS, APRONS

A style for every kind of work in field, plant or laboratory, in rubber, neoprene latex and oiled. Designed for maximum protection and comfort, and made to assure unequalled value through durability and long wear. Write for copy of special Clothing Catalog.

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CIRCLE 91 ON READER CARD

CIRCLE 103 ON READER CARD→

Equipment for the Safest Industry

Protective equipment plays a big part in the consistent top safety record of the communications industry

THE TELEPHONE industry began one spring evening nearly 85 years ago when a young Canadian named Alexander Bell spilled acid on himself and yelled for his associate Mr. Watson. Irregular as it was, this event proved to be the world's first reported telephone accident.

It is doubtful if Dr. Bell — even with this unusual experience and his clairvoyant prophecy of modern telephonic communication—visualized the multitude of hazards that one day would surround his discovery. Today, for instance, although a telephone workman no longer fears being kicked in the head by a mule or horse, he might be confronted with a more direful calamity by entering an oxygen-deficient manhole.

The exposure to hazards in the telephone business has always been the greatest in the Outside Plant — that part of the system between the central office and the customer.

Today, with more telephone work being accomplished by fewer people, there is a need for constant alertness against hazards and a demand for safer, more dependable and lighterweight tools. Engineers in Outside Plant Development at Bell Telephone Laboratories meet this demand by designing the safety tools and equipment used by telephone workmen.

Three general categories of equipment are designed for telephone workmen by Outside Plant.

1. Functional tools such as screwdrivers, rubber gloves, body belts, safety straps, climbers, and electrical test sets for cable fault location.

2. Tools used to determine whether a job can be performed without danger.

3. Equipment devised solely for guarding work areas to protect both workmen and the public.

Climbers — strapped like spurs to workmen's feet for ascending poles — illustrate how Outside Plant maintains top performance and safety in their equipment. In 30 years, only three significant design changes in climbers, all in the interest of safety, have been found desirable by Outside Plant Engineers. One change, that of the gaff angle, helped lower the climber cutout (accidental disengagement) rate nearly 50 per cent. For years, this hazard accounted for 10 per cent of the disabling injuries to Bell System Plant men.

Rubber gloves, another function-

— To page 162

Safe, Acid-Resistant STATIC-FREE

100% Dynel

CHEM-WEAR UNION MADE ® Work Clothes



Withstands More Repeated Laundering & Rugged Wear Than Work Clothes Made of Other Fibres

Nationally famous CHEM-WEAR Sanforized* work clothes repel acids, caustics and stains . . . and do not support combustion. CHEM-WEAR has the durability of Dynel and the comfort of cotton. Strongly stitched seams are acid and caustic resistant, too.



CHEM-WEAR Work Clothes are available in Shirts, Trousers, Coveralls, Laboratory Coats. Also Work Aprons of rugged, clear vinyl.

*Shrinkage less than 1%

HOODED COVERALLS

Protects Boiler Maintenance Men & Clothing From Soot



Sanforized* heavy blue denim completely covers from head to foot. Securely stitched and reinforced front piece. Adjustable hood, wrists and ankles.

*Shrinkage less than 1%

PERMANENTLY FLAMEPROOFED Work Clothes



For hazardous jobs when danger of flame or flash point exists. Flameproofing will not wash out.



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MADE TO ORDER
Work Clothes and Industrial Apparel
Designed and Made to Meet Your Requirements

Quality Since 1896

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PLANTS: ORANGE, CONN. & PROSPERITY, S.C.
Mailing Address: P.O. BOX 1784, NEW HAVEN, CONN.

CIRCLE 125 ON READER CARD



Cotton work glove

Vinyl-impregnated fabric Werx glove

Which hand was better protected?

Test after test by safety engineers demonstrates that job-fitted gloves not only protect better, they cost less because of longer wear and fewer nuisance hand injuries.* For example:

CASE No. 582: Handling highly polished laminates, Edmont's vinyl-impregnated Werx glove gave a surer grip and better protection against sharp edges, eliminated the problem of lint marks, and outwore the 10 oz. cotton gloves previously used 4 to 1 . . . . cut glove costs 50%.

CASE No. 633: Strapping steel wire around boxes, Edmont *job-fitted* Super Werx gloves wore 4 times longer than the leather palm gloves previously used . . . cut glove costs 73%.

CASE No. 662: Handling hearing aid components, light, extremely flexible Edmont Werx-Lite gloves not only kept powdery chemicals from filtering through to the operator's hands, but gave more sensitive "feel" and outwore the light cotton gloves previously used 5 to 1.

PROVED IN MANY PLANTS

Hundreds of verified cases like the above prove that safety and economy go hand-in-glove. The Werx-type gloves used on the above operations (three of the many kinds made by Edmont) are of vinyl-impregnated fabric which keeps dirt out but lets air in, gives non-slip grip, is extremely flexible and machine washable. Regular Werx gloves outwear 8 oz. cotton 5 to 1; Werx-Lite gloves wear 3 times longer than 8 oz. cotton; the Super Werx outwears heavy 18 oz. cotton 6 times. A fourth style, Perforated Werx, is extra cool. Natural hand action pumps air through its perforated back.

FREE TEST OFFER TO LISTED FIRMS:

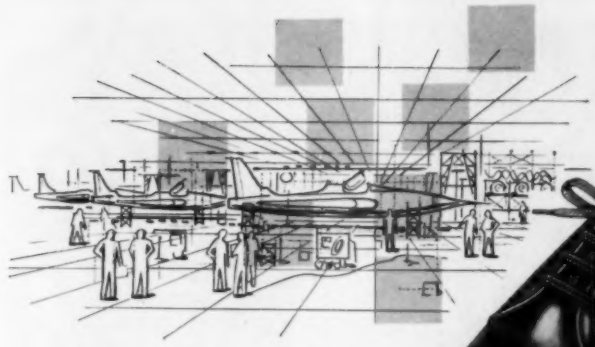
We make more than 50 types of impregnated and coated fabric gloves to fit all job requirements. Tell us your operation. We will recommend correct gloves and send samples for comparison tests. Write Edmont Inc., 1205 Walnut Street, Coshocton, Ohio. In Canada, write Edmont Canada Ltd., Cowansville, Quebec.

**Company names and full details on request*

Edmont

JOB-FITTED GLOVES


H302
NEW LAST
NEW STYLING
NEW SLIM, TRIM LOOK
new
all over.
NEW COLOR



Every new feature to make them finer is built into Hy-Test's new SUPERVISOR safety oxfords. NEW dress-shoe styling on a NEW last in NEW colors and finishes . . . all are combined with the popular Anchor Flange Steel Box Toe and other safety and comfort qualities. Truly, you can't tell them from latest dress shoes until they save your toes. Get full details on these new numbers from our representative or write HY-TEST SAFETY SHOES, Division International Shoe Company, 1509 Washington Ave., St. Louis 66, Mo. • 2224 N. Tenth St., Philadelphia 33, Pa.



H301



H303



H304

H301—NEW Havana brown shadow-tone leather oxford, NEW Supervisor last, oak leather sole, rubber heel, Anchor Flange Steel Box Toe.

H302 (at left)—Same as H301 except in Hy-Shine black.

Sizes: AA . . . 8-12, 13, 14; A, B . . . 7-12, 13, 14; C . . . 6-12, 13, 14; D, E . . . 5-12, 13, 14; EEE . . . 5-12, 13.

H303—NEW Havana brown shadow-tone leather moc slip-on, NEW Supervisor last, oak leather sole, rubber heel, Anchor Flange Steel Box Toe.

H304—Same as H303 except in Hy-Shine black.

Sizes: B . . . 7-12, 13; C . . . 6-12, 13; D, E . . . 5-12, 13.
Available in May.

HY-TEST

HY-TEST INTERNATIONAL SHOE COMPANY SAFETY SHOES

Safety Shoes

← CIRCLE 90 ON READER CARD

FREE!
. . . to help you plan your safety program



2 GIANT CATALOGS
. . . that list the world's largest and finest stock of
SAFETY MATERIALS

The National Safety Council is the world's largest organization devoted to accident prevention. It offers unsurpassed facilities for serving your needs in accident prevention programming and materials. NSC distributes approximately 75,000,000 pieces of safety material a year. Thousands of items are available through these 2 catalogs.

CATALOG OF OCCUPATIONAL SAFETY MATERIALS
64 pages on booklets, manuals, training films, safety incentives, and other NSC services.

DIRECTORY OF SAFETY POSTERS
76 pages of safety posters. Illustrates over 750 posters currently available.

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FIRM _____
ADDRESS _____
CITY _____ STATE _____

— From page 158

al tool designed by Outside Plant, point up the emphasis on safety. Rigid mechanical, material, and electrical requirements must be met before these gloves are used, and to insure continuous safety, they must be returned from the field periodically for examination and electrical retesting.

Typical of tools designed by Outside Plant engineers to determine if a workman can do his job free from hazards which could cause injury or death, is the hot wire gas indicator, an instrument which indicates the presence of an explosive gas in a manhole. A second kind of indicator shows the presence of carbon monoxide. Another is the suction gas indicator which determines if a manhole is deficient in oxygen.

To safeguard workmen and the public during construction and maintenance operations along streets and highways, Outside Plant engineers design a variety of devices such as manhole guards, warning flashers, warning flags, flood lamps, and barricades.

Workmen no longer can depend on kerosene lanterns with red globes for protection from today's high-speed traffic. Now, high-intensity, condenser-discharge type flashers at high elevations are needed, both night and day, to provide sufficient warning. The Outside Plant engineers designed this safety equipment. They have also reduced the number of accidents attributed to "insufficient warning equipment" by designing fluorescent red flags, reflective warning signs, brightly colored manhole guards, and safety cones.

The design of equipment must be flexible. The marked trend toward small crews and solo workmen (those working alone more than half of the time) has complicated the technical problem of workmen safety on the one hand and portability and ease of installation on the other.

For example, the aerial platforms used by the solo workman to gain access to his work — high above the ground — must be light enough to be handled by one man and at the same time structurally safe. Outside Plant solves these problems. Similarly, tents, tent heaters, and a host of other items which must be operationally safe yet practical for use by one man working aloft, are the responsibility of Outside Plant engineers.

The area of endeavor by Outside Plant is immense and challenging. Continually, this department strives for good tools, material, structures and equipment to minimize accidents.



"Show me something in safety shoes . . . I'm a dancing teacher!"

Duplicate Mailings

To assure complete coverage, some National Safety Council mailings go to several different mailing lists. Therefore, those whose names are on more than one list receive duplicate materials.

It may seem, on first thought, the Council could save time and money by eliminating such duplication. The fact is, these mailings are from plates, and the expense of hand sorting the plates to eliminate the duplication would normally be much greater than the cost of the duplicate mailings.

To those who may receive these duplicate mailings it is suggested that, wherever appropriate, the duplicates be passed on to others who may be interested.

EXCELLENT OPPORTUNITY
For alert representatives with successful creative know-how to promote highly profitable exclusive line of rubber mats and mattings. Those selected will sell the industry's most complete line, backed by powerful national sales promotion and advertising. Address replies covering lines, territory, present sales volume, trade references to: Box 470 NATIONAL SAFETY NEWS.



Work clothes with *GRIPPER* Snap Fasteners open with one quick tug!

They're faster than conventional buttons and buttonholes, and safer. A second often means the difference between injury and safety—and GRIPPER Snap Fasteners can supply that necessary margin of time. There's no drawn-out fumbling with hard-to-handle buttons and buttonholes. When work clothes have GRIPPER Snap Fasteners they come open—and off fast! For safety's sake, it pays to specify GRIPPER Snap Fasteners for your employees use. There are other reasons, too. GRIPPER Snap Fasteners are rust-proof and laundry-proof—will last the life of the garment they're on. And they keep garments neater . . . present a far smoother appearance! Phone your local industrial launderer soon—and ask about GRIPPER Snap Fasteners! Ask too, about special GRIPPER Snap Fastener tags supplied with every garment. They spell out the safety advantages of GRIPPER Snap Fasteners—help make your employees safety conscious! A product of **SCOVILL** Manufacturing Company, Waterbury 20, Conn. Also makers of GRIPPER Zippers.



GRIPPER® *Snap Fasteners . . . for safer work clothes!*

CIRCLE 106 ON READER CARD

Foot Protection

Shoes are available for every kind of job

Footwear for Various Exposures

TYPES OF FOOTWEAR	EXPOSURE
1. Conductive	Moisture: 8, 9
2. Nonsparking	Standing in water: 8, 9
3. Foundry shoes	Chemicals: 4, 8, 9
4. Wooden sole	Oil and grease: 4, 9
5. Insulated	Electric current: 5, 8, 9
6. Felt pac	Cinders: 4, 10
7. Linemen's boots	Hot surfaces: 4
8. Rubber boots, overshoes	Molten metal: 3
9. Neoprene boots, overshoes	Sharp and abrasive surfaces: 4, 12
10. Asbestos overshoes	Cold, snow, ice: 6
11. Shower sandals	Explosion hazards: 1
12. Steel innersoles	Slippery surfaces: 13
13. Slip-resistant soles and heels (Cord and cork)	Skin infections, athletes foot: 4, 11
14. Footguards	Handling extra heavy objects: 14

ALTHOUGH a variety of constructions and materials exist, safety shoes for industrial use fall into five general categories, determined by intended use:

1. Steel box toe (general use).
2. Conductive.
3. Explosives operations (nonsparking).
4. Electrical hazard (shock-resisting).
5. Foundry.

Special styles for men and women are provided in classes 1, 2, and 3.

As generally used, the term "safety shoe" means a shoe with a reinforced toe. Steel toe boxes are specified for most occupations because of their ability to resist heavy blows.

Wearing of safety shoes for all jobs is encouraged by many companies and subsidy programs have been helpful in promoting foot protection.

Off the job, safety shoes are desirable in farming, in home work-

— To page 185

RE-MAR PRODUCTS CORPORATION

Elizabeth, N.J.

"The Most Efficient Tool Bucket for Every Job on the Line"

"STOWKIT"

Safe.....Durable.....Easily Stored



Line Hose Bag



Stowkit w/tray



Hot Line Bag



Line Hose Bag w/outside pockets



Stowkit Bucket

Distributors in Principal Cities
Write for Particulars

RE-MAR PRODUCTS CORPORATION

205 Madison Avenue, Elizabeth, N.J.

CIRCLE 107 ON READER CARD



Boots that bear this label B.F.Goodrich XtraTuf won't slip when floors are slick

B.F.Goodrich XtraTuf Anklefit boot has non-skid outsole that keeps workers sure-footed on slippery floors

How to keep workers sure-footed on floors slick with oil, grease? B.F.Goodrich tackled the problem—designed, tested, rejected. The result of this intensive research is the B.F.Goodrich XtraTuf Anklefit boot with a non-skid outsole that gives terrific traction, foot security even on the most slippery floors. And the tough neoprene rubber used in these boots resists oil, greases, fats, acids which cause most rubber to break down—so BFG XtraTuf Anklefit boots far outlast other boots in this kind of service.

These BFG boots also last longer because they have no exterior seams —the place where most leaks start. Unlike ordinary boots which are made with sections of rubber joined together at seams, the XtraTuf Anklefit boot has its skin "dipped" on, just like taffy is dipped on an apple. It's completely covered with a thick, seamless layer of neoprene.

B.F.Goodrich XtraTuf neoprene footwear comes in regular and anklefit boots, industrial work shoes with plain or steel safety toes, and are also available in an over-the-shoe style. For full information and a catalog, call your B.F.Goodrich distributor, or contact *B.F.Goodrich Industrial Footwear, Dept. N, Watertown 72, Mass.*

INDUSTRIAL FOOTWEAR BY B.F.Goodrich

CIRCLE 108 ON READER CARD

Safety Belts and Harness

They need maintenance—they are no better than the care given them

CERTAIN OCCUPATIONS require the use of safety belts or harnesses with life lines. In general these safety devices are obligatory:

1. For work at high levels.
2. In closed spaces where air may be irrespirable.
3. Where there is danger of being buried by slides of material.

Safety belts are used routinely or occasionally by:

1. Structural steel and bridge workers.
2. Window cleaners.
3. Public utility linemen.
4. Forestry workers.
5. Cranemen.
6. Miners.
7. Mechanics.
8. Painters.
9. Workers entering tanks, bins, and underground passages.

In selecting equipment, consider two types of use—normal and emergency.

Normal use involves comparatively light stresses applied during regular work. These stresses rarely exceed the static weight of the wearer.

Emergency use means stopping a man when he falls. This may subject every part of the belt to an impact loading many times the weight of the wearer.

The probability of injury depends on the way the load is applied as well as on the total amount of the load. A person can stand a great deal more shock if the belt is tight enough to remain at the waist than if it is jerked up under the shoulders by the impact of a fall.

The life line should be long enough to permit freedom of movement, but the life line should be tied off as short as the job will permit.

Types of Equipment

Types of belt and harness have been developed for various occupations. Examples of specialized equipment are the lineman's belt and safety strap and the window cleaner's belt.

These belts are built for extra severe use. Both belting material and hardware are the result of much research and experience in the field. Belts are usually serially numbered and dated so records of age and condition may be kept.

For many occupations a lighter

— To page 170



FOR SAFETY . . .
SPECIFY MILLER YELLOW

Attractive MILLER "YELLOW" is now available in nylon safety straps and lineman's body belts for higher visibility both day and night. All MILLER "YELLOW" safety straps and body belts are carefully designed, engineered, and tested for safety, comfort, and maximum wear. MILLER drop forged hardware includes the specially designed round nose snap on the strap and the patented MILLER circle dees on the body belt. Shown here are MILLER Safety Strap No. 6-NF (Friction Buckle) and MILLER Body Belt No. 60-NL. Ask for specific literature on MILLER "YELLOW" for safety.

Miller EQUIPMENT COMPANY, INC.
FRANKLIN, PA.
IN CANADA • SAFETY SUPPLY, CO., TORONTO
CIRCLE 109 ON READER CARD

Welders wear comfortable, lightweight cotton coveralls treated with "X-12" flame retardant, instead of heavier garments.



Give employees the safety and comfort of work clothing protected with Du Pont "X-12" FLAME RETARDANT

Many of your production and maintenance personnel, such as these welders, are exposed daily to fire hazards. You can give them protection without loss of comfort when you have clothing treated with Du Pont "X-12" Flame Retardant.

Work clothing and uniforms can be treated with "X-12" during laundering. Treated garments will not support fire, and only char during exposure to flame.

"X-12" doesn't change the appearance, color, feel or the tensile strength of fabrics. And, since it penetrates the fabric and allows the garment to "breathe", it doesn't interfere with clothing comfort.

A growing number of commercial and industrial laundries offer this low-cost treatment. For more details, send the coupon below.

DU PONT

"X-12"
FLAME RETARDANT

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Industrial and Biochemicals Dept.
Rm. 2545 SN, Nemours Bldg., Wilmington 98, Del.

Please send booklet describing the advantages of work clothing treated with "X-12".

Name _____

Company _____

Address _____

City _____ *State* _____

CIRCLE 110 ON READER CARD



How to improve employee relations –increase your coverage

MR. SAFETY DIRECTOR: It's no problem to boost employee morale while increasing the effectiveness of your foot protection program. Just let an Iron Age safety shoe specialist use his experience in recommending the economical stock orders you need to upgrade your record.

There are over 50 Iron Age safety shoe styles available. They are purpose-designed for the working conditions involved. All, thanks to newly-developed lasts and patterns, are comfortable. All feature the durability of top grade tannages, plus the flexibility and light weight of the latest advances in nationally advertised outsoles. These are *real quality* safety shoe values that your employees can see, feel and will buy.

Remember, our prompt service to every order assures you of *maximum sales with minimum stocks.* Write for your copy of our colorful 1961 catalog. Iron Age Safety Shoes, Pittsburgh 12, Pa.

Iron Age SAFETY SHOES





No. 615 A to E

A very flexible loafer with hidden gore for instep comfort and ankle hugging fit. Has the famous BEAR-FOOT NITROCREPE NEOPRENE SOLE with no-nail heel.



No. 621 A to EEE

This "black beauty" has a navy style plain toe. For comfort supreme there is a full length covered cushion insole. SEIBERLING OIL-PRUF SOLE.

Iron Age

The Safety Shoe for Industrial America



No. 668 C to EEE

A new instep protector safety shoe for workers in heavy industry—comfort-lasted in black elk leather, long wearing NEO-CORD SOLES AND HEELS.



No. 674 C to EEE

In this chemical shoe, glove leather is treated with SCOTCHGARD brand leather protector for resistance to water, acids, alkalies. GOODYEAR COBRA OIL PROOF SOLES.

CIRCLE 111 ON READER CARD

CIRCLE 141 ON READER CARD

Where HEAT is A PROBLEM

. . . Fyrepel has the answers. We are the largest fabricators of aluminized glass cloth heat protective clothing and equipment. Our staff of experts in this field stand ready to serve you in working out your heat problems.



HEAT REFLECTIVE CURTAINS

These heat reflective curtains are just one of the many Fyrepel products being used all over the world in industry where heat is a major problem to effective operation. For complete details on this and other Fyrepel products write, wire or phone today. Consult us now on your particular problem.

FYREPEL PRODUCTS INC.
NEWARK, O.

belt will provide ample protection. These may be of the simple body type or the harness type. Both types have a D to which a life line is attached. The harness type distributes the shock over the shoulders, back, and waist instead of concentrating it at the waist.

Materials. Belts of leather, and cotton, nylon and dacron webbing are provided by most manufacturers.

Well-tanned and oiled leather resists most chemicals but it should not be left in contact with them. Regular cleaning after use is important.

Leather ¼-in. thick and 1½-in. wide will have an ultimate strength of about 500 lbs. This is adequate for lifting a man out of a tank or bin.

Webbing will stand more heat than leather and, after soaking in water, will dry out in its natural condition. Friction buckles can be used with webbing, avoiding loss of strength at buckle holes.

Belts intended to check a fall demand strength proportionate to possible distance of fall and weight of body. A 2-in by ¼-in. leather belt would probably arrest the fall of a window washer at 6 ft. It might break at 10 ft.

For a comfortable margin of safety, a window cleaner's leather belt should be at least 3- in by ¼ in.

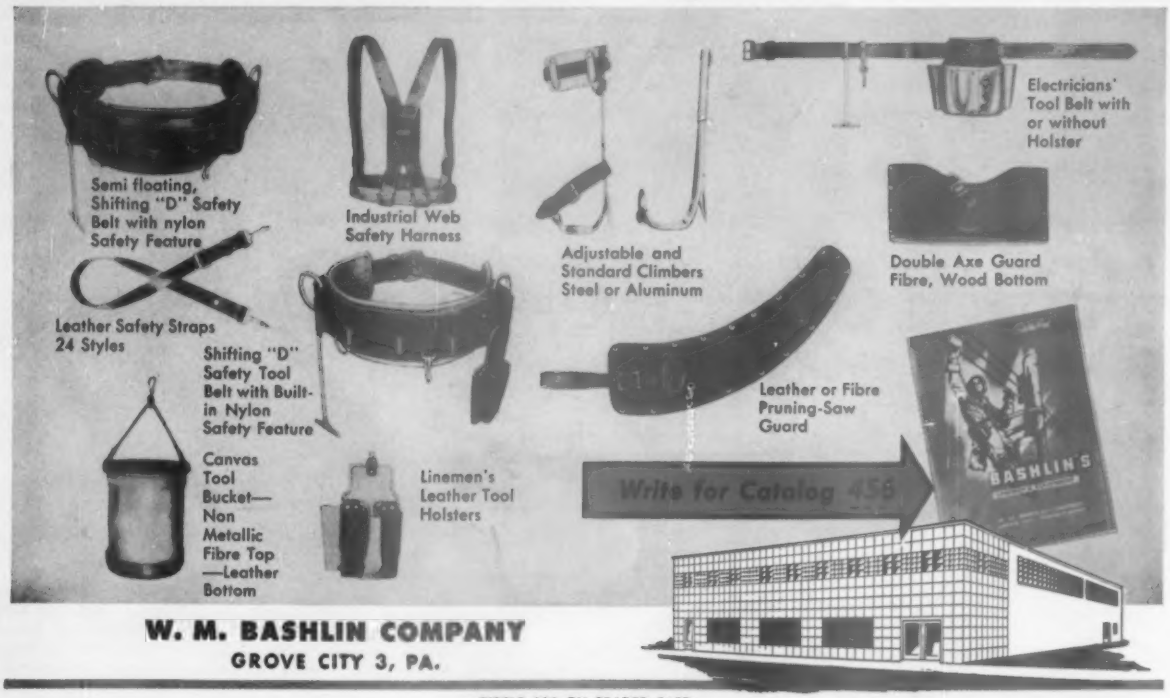
Webbing of special type is available for certain uses. It can be treated to resist paint and mildew. For the chemical and petroleum industries, webbing impregnated with neoprene resists acid conditions. Synthetic fabrics are also mildew resistant.

Body harness with life line attached expedites rescue if the wearer should be overcome by gas or vapors, buried by falls of loose materials or injured in confined spaces.

Wherever work requires a supplier-air respirator, harness and life line rather than a belt should be used.

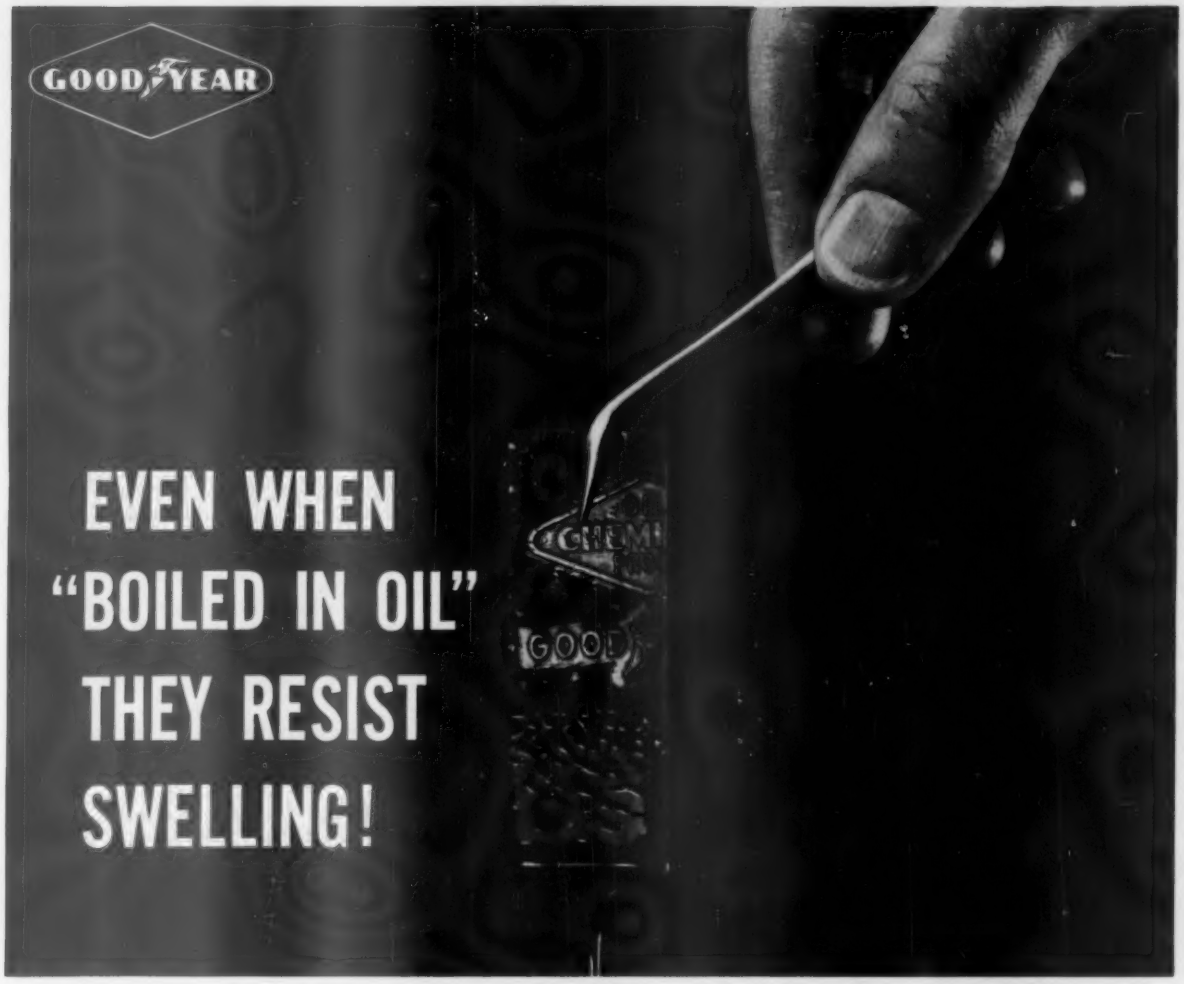
If long free falls are possible, harness should be designed to distribute

Bashlin's *Linemen's Choice* **SAFETY EQUIPMENT**



W. M. BASHLIN COMPANY
GROVE CITY 3, PA.

CIRCLE 105 ON READER CARD



How far can you go in testing the oil-rejecting qualities of a sole? Goodyear went all the way! Yes, we put Chemigum *Oil Proof* Soles to a real "torture test," along with other nationally advertised brands used on safety shoes. Specifically, we "cooked" *equal* sizes of soling materials in diesel oil for 24 hours. The result? Chemigum expanded only a small fraction. Brand X swelled 2.17 times as much as Chemigum. Brand Y swelled 2.26 times as much. Here's proof beyond question that Chemigum is *oil proof!* Chemigum is easily today's greatest soling for safety shoes!



CHEMIGUM OIL PROOF SOLES

- "Engineered tread" . . . for sure-grip, non-slip walking even on floors cluttered with steel chips and other factory debris.
- Lighter in weight than other brands of soling material designed for most other safety shoes.
- Other outstanding features: Remarkable resistance to picking up steel shavings and chips . . . New handsome amber color . . . Non-marking.

More and more manufacturers of safety shoes are replacing old-style soles with these remarkably safer Chemigum *Oil Proof* Soles. Don't compromise with safety . . . always specify Chemigum *Oil Proof* Soles!

***CHEMIGUM Heels** are made of the same sensational oil proof material as Chemigum Soles.*



Mr. Neolite says:
"We're proud to bring you another pioneering product of GOODYEAR research."

LOTS OF GOOD THINGS COME FROM

GOODYEAR

NEOLITE AND CHEMIGUM, T.M.'S— THE GOODYEAR TIRE & RUBBER COMPANY, AKRON, OHIO

CIRCLE 113 ON READER CARD

CIRCLE 143 ON READER CARD

BRAND NEW!

TINGLEY
OVER-THE-SHOE
KNEE-HI
CLOSURE BOOTS—
⅓ THE WEIGHT
OF OLD STYLE
LINED
KNEE BOOTS.



Tough and rugged, these all rubber (no plastic) boots are molded in one piece. Stretch on easily — fit snugly — and "bellows action" gives air circulation inside boot. Quickly washed inside and out. No fabric lining to snag, tear or pick up dirt. 4 sizes fit 18 work shoe sizes. Also available in acid-oil-chemical proof neoprene.

Sold through Safety and Industrial Equipment Distributors.

In neoprene $11.25

In rubber $7.95

TINGLEY RUBBER CORPORATION
RAHWAY 10, NEW JERSEY • Est. 1906

the impact force over legs and chest as well as waist.

Quick release from a safety belt is important where there is danger of fire. Petroleum workers, for instance, use belts with a quick release buckle which can be disengaged instantly by a single motion of the hand.

Boatswain's chair. Where a belt must support the entire weight of a man while he works, as in raising and lowering him along the wall of a building, a boatswain's swing chair should be used. In this type of belt, one strap is used as a seat, sometimes with a board to make it more comfortable. Attached to the seat strap at each side is a strap around the waist to prevent his falling out of the seat. The waist strap permits the wearer to stand or sit.

Tool buckets of collapsible canvas are needed on some jobs so the worker may have his hands free while climbing. Edge tools should be protected by guards while being carried.

Belts for some occupations contain loops and pockets for light tools.

Shock absorbers incorporated in life lines reduce the severity of impact. This decreases both the possibility of injury to the wearer and failure of the equipment.

Life lines. For most life lines, ¾-in. manila rope or ½-in. nylon rope is recommended.

Nylon rope has more stretch than manila which enables it to absorb shock and sudden loads. It has high tensile strength wet or dry, is tough, flexible, durable, and easy to handle —resists moisture and mildew and can be stored wet.

Steel cable without a shock absorber should not be used for life lines where a free fall is possible, because its rigidity increases the impact load. Metal cables should not be used around electricity.

Care of Belts

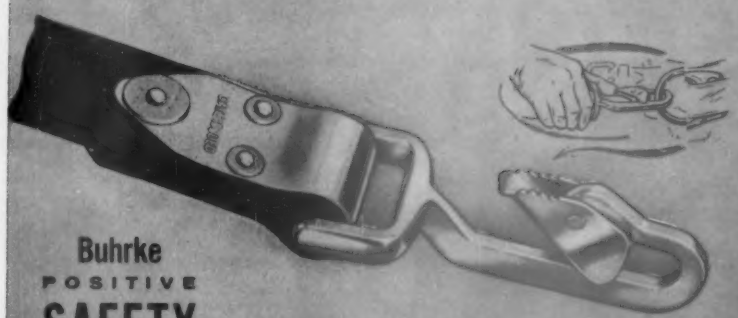
Leather. Brush dust off carefully to avoid scratching. Then wash with

— To page 184

CIRCLE 114 ON READER CARD

Add these "keys" to your BURR KEY BILT *Your Key to Safety*

SAFETY PROGRAM



Buhrke
POSITIVE
SAFETY
SNAP

Drop-forged of Quality Aircraft Alloy
Guaranteed minimum proof-load of 2,500 lbs.

PAT. PENDING

Buhrke craftsmen are creating outstanding safety equipment to fit your need . . . and are constantly improving our safety equipment to insure your safety

- After engaging the D-Ring any twisting or reverse movement of such Ring has a tendency to tighten and lock the guard in position therefore, giving a more positive locking action.
- Virtually impossible to get false engagement of D-Ring into Snap. Any engagement of D-Ring into throat of Snap will automatically lock the Ring into position with the slightest amount of body pressure.
- Line of force is directly on the line of pull, which eliminates any side deflection and, in turn, increases the safety factor over the old types and styles of Snaps.
- Lever on guard is serrated to eliminate sliding of gloved hands or fingers.

For positive climbing protection • **R. H. BUHRKE** • *Chicago 7, Illinois*

How to grow your own money

A U.S. Savings Bond is better than money. It grows. Plant $18.75 in a Savings Bond and in 7¾ years it'll be $25—a full one-third bigger. The U.S. Government guarantees this growth. And if you can't afford to lay out the full purchase price, you can buy Savings Bonds a bit at a time through your Payroll Department where you work. It's an automatic installment plan that costs you no interest or carrying charges.



Savings Bonds are smaller and bigger. Today's Bonds are about half the size of the earliest ones. Yet they pay 3¾% interest—more than ever before.

Advantages to think about

You can save automatically on the Payroll Savings Plan, or buy Bonds at any bank • You now earn 3¾% to maturity, ½% more than ever before • You invest without risk under a U. S. Government guarantee • Your Bonds are replaced free if lost or stolen • You can get your money with interest anytime you want it • You save more than money—you buy shares in a stronger America.



Now he's buying money on the installment plan. His payroll clerk will set aside as little as 63¢ a day for Savings Bonds. But in 40 months, he'll own $1000 worth at maturity!



You buy more than a good return with Savings Bonds. You help keep our country strong for today's generation and the ones to come. That's one of the reasons so many Americans buy and hold U. S. Savings Bonds.

You save more than money with U.S. Savings Bonds

20th ANNIVERSARY 1941 1961

This advertising is donated by The Advertising Council and this magazine.

Hands and Arms

One of the best bargains in industry is the glove that prevents an injury

HANDS AND ARMS, essential in performing most types of work, are more exposed to cuts, scratches, burns and bruises during work than any other part of the body.

Because of manual dexterity required from job to job, the type of protection for hands and arms must be carefully chosen.

Finger movement is necessary for practically all jobs, which makes protection more difficult than for most other parts of the body. For the forearm, semi-rigid protectors are often practicable.

Types of protection available in a wide variety of styles and materials include:

1. Gloves
2. Mittens
3. Hand pads
4. Arm protectors
5. Sleeves
6. Finger guards
7. Protective creams

Generally, gloves, mittens, or hand pads should not be worn around revolving machinery. An exception is buffing and polishing on high-speed lathes where parts become too hot to handle with bare hands.

Ordinary cotton work gloves offer some protection on light jobs but many operations require more durable material in a variety of specialized designs.

Common materials used are:

Canvas is relatively low in price and suitable for light work. It is washable. Canvas gloves are made



Hydrazine, similar to a strong alkali, calls for precautions. (Olin Mathieson Chemical Co.)

Specialized Suits

FOR FAST, SURE FIGHTING OF MAJOR CHEMICAL DISASTERS

When chemicals flow unchecked from a line break . . . and dangerous fumes fill the air . . . then, at that precise moment, you must have highly chemical resistant, complete enclosure emergency garments on hand that workers can wear safely into a dangerous area.

The StaSafe Acidmaster (for use with various types of self-contained breathing apparatus) and the StaSafe Emergency Suit (with airline) are those types of garments. Both are made of StaSafe Gra-Lite-20 fabric . . . a lightweight garment material resistant to an extraordinarily wide range of chemicals. Gra-Lite has excellent abrasion resistance, will not support combustion and remains flexible under wide variations in temperature. Gas-tight, as well as liquid-tight, features are available.

Both the Acidmaster and the Emergency Suit have many unique features that aid emergency crews in finding and repairing causes of chemical escape. Write today for full information on both garments.



StaSafe Acidmaster

Rear of StaSafe Emergency Suit showing air line and life line.



Front view of Emergency Suit model designed for Scottoramic face piece.



STANDARD SAFETY EQUIPMENT COMPANY
403 NORTH QUENTIN ROAD • PALATINE, ILLINOIS

13 HECKEL ST.
BELLEVILLE 7, N.J.

12921 W. WASHINGTON BLVD.
LOS ANGELES 66, CALIF.

855 EAST 152nd STREET
CLEVELAND 10, OHIO

CIRCLE 116 ON READER CARD

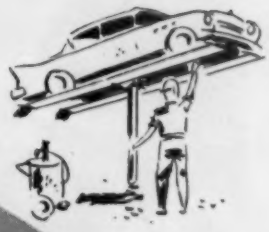
STANDARD ON AMERICA'S SAFETY SHOES

"SAFETRED"

BEARFOOT

MICROCELLULAR WORK AND SAFETY SOLES





Neoprene Nitrocrepe—Highly resistant to oils, acids, grit. Lightweight—Safetred non-slip design.

Neoprene Aircushion—Safetred non-slip design—density adjusted for stitch attachment.

Neoprene Aircushion Cork—Popular cork for special non-slip qualities. Density adjusted for stitch attachment.







Bearfoot Soles—Best for Every style requirement—Every wear condition—Every manufacturing method.

A trusted name on shoe bottoms since 1924

THE BEARFOOT SOLE CO., INC. • WADSWORTH, OHIO

Boston: 210 Lincoln St., Harry T. Fogg
Milwaukee: 1931 S. Allis, Atkinson Sales Company
C. R. Gage, Ole Rosenquist, K. F. Trimble, Dan Ward

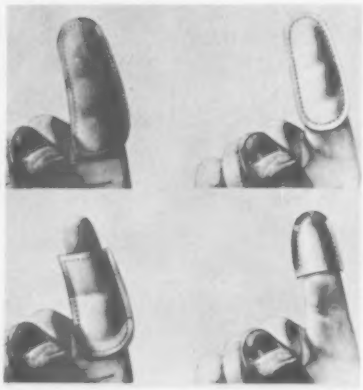
St. Louis: 1602 Locust St., Don W. Murray
New York City: 225 W. 34th St., Homer Bear
Glenside, Penna.: 124 S. Easton Rd., R. L. Stiles & Co.
R. L. Stiles, Jr., Robert C. Erickson
Box 547, Carlisle, Penna.

CIRCLE 117 ON READER CARD



PERSONAL PROTECTIVE EQUIPMENT POSTERS
Here are just a few of the National Safety Council safety posters that deal with wearing personal protective equipment. See 1961 Directory of Safety Posters, pages 44-48, for complete listing of posters on this subject.

CIRCLE 118 ON READER CARD



Finger guards are available in full-length, first-two-joints, lower-two-joints, and fingertip sizes. (Mine Safety Appliances Co.)

in several weights and grades and in sizes for men and women.

Duck and *terry cloth* are used for handling objects which are not too rough, sharp, or hot.

"Hot mill" gloves are made from a heavy twisted weave fabric which also gives good service for handling rough objects.

Leather is more durable for most industrial uses. It offers greater protection against cuts and abrasions. Clean leather or leather-faced gloves give a firmer grip on smooth metal objects than do cotton or other types.

Chrome leather is used where there is exposure to sparks or molten metal. However, no material of animal or vegetable origin will stand continued excessive heat.

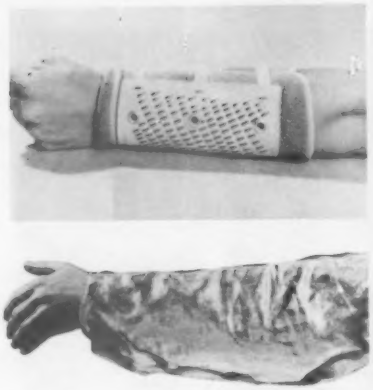
Asbestos is used where hands must be protected against extreme heat, as in steel mills, heat treating plants, welding, galvanizing, and glass manufacturing.

Asbestos gloves may be obtained unlined or with lining of flameproof fabric or wool. Lining is desirable for comfort and added protection against heat. It also keeps the hand from rubbing against rough inside seams, which unravel from movement of the hand.

Heat-repelling mittens of aluminum-coated fabric between two layers of asbestos, jersey lined, offer unusual protection against heat. These mittens are reversible.

Rubber, neoprene, and *vinyl* films are suitable for chemical laboratories and plants where acids and other corrosives are handled.

Neoprene and vinyl are particularly useful where petroleum products and organic solvents are han-



Top — steel-reinforced arm protector. Bottom — aluminized type. (Mine Safety Appliances Co.)

dled. Plastics vary in their resistance to chemicals and the manufacturer should be consulted about exposures.

Fabrics coated with rubber, neoprene or vinyl are used for light cleaning operations. They offer greater protection against abrasion than uncoated fabric.

When rubber or plastic gloves are worn for long periods, a lightweight fabric liner is desirable. If no liner is available, talcum powder should be shaken into the gloves before wearing.

Rubber, plastic, and asbestos gloves should extend well above the wrists. Gauntlets should have locking devices to assure a snug fit about the wrists. Sleeves should be kept rolled down, leaving no skin exposed.

Metal mesh gloves are used in meat and other cutting. They should fit snugly.

Metal staples in gloves, mittens,



"No, those aren't exactly safety gloves."



NEW

from HAUS OF KRAUSE



LIGHTWEIGHT SAFETY SHOES
REDUCE FATIGUE TO CUT ACCIDENTS

• SMART CASUAL LOOK
• RESIST ACIDS, ALKALIS WATER, SOIL • STEEL SHANK SUPPORT

Even men who resist ordinary safety shoes go for the lightweight comfort and good looks of LITE KNIGHT Safety Shoes. They weigh a full pound less per pair—and this adds up to an amazing half-ton saved for every mile walked.

Gray, Loden Green or Houn' Dawg brushed pigskin uppers are tanned with Kemi Klad to keep their soft, casual look. The natural breathe-ability of pigskin means healthy ventilation. And thick, springy, oil-resistant neoprene soles cushion every step.



◀ Casual oxford or chukka styles in this exclusive Haus of Krause construction that permits the use of lightweight materials in LITE KNIGHT Safety Shoes while meeting all ASA requirements for toe protection.

Industrial jobbers interested in acquiring a franchise, write to Haus of Krause, Rockford, Mich.

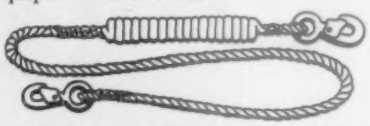
HAUS OF KRAUSE
SAFETY SHOES
H/K

CIRCLE 119 ON READER CARD

DON'T find out by accident

In safety equipment, second best just won't do!

Get the *facts* on the safety equipment you need. For 29 years, the Rose Manufacturing Company has been designing, testing, and manufacturing the finest safety equipment in its field.



Safe-Hi UNOLYN COIL SHOCK ABSORBER AND LANYARD

The Safe-Hi Unolyn Shock Absorber and Lanyard are safe two ways! A 50-inch length of Nylon Lanyard is coiled around a 10-inch length of Unolyn. After the Unolyn has stopped the fall and absorbed the shock, the Nylon lanyard retains full strength and safety. Unolyn s-t-r-e-t-c-h-e-s to 5 times its own length—one pound of Unolyn absorbs up to 25,000 foot-pounds of kinetic energy—to guard against broken ropes, anchors, belts and broken men due to impact in stopping falls!

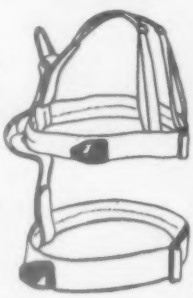


Safe-Hi LADDER SHOES

Safe-Hi Ladder Shoes hold on all surfaces because they combine fibre and neoprene in the tread. This combination holds any ladder safely on wet, dry or slippery surface. The self-sharpening steel spike flips down for ice or snow.

Listed by Underwriters Laboratories for all surfaces. Also available in spark-resistant metals.

Safe-Hi CHEST-WAIST BELT



The Safe-Hi "Chest-Waist" belt is the *safest* belt made for workmen in high places, because it *divides* the shock load to two separate areas of the body—the chest and the waist. It also assures proper adjustment; the shoulder-supported chest belt can be worn loose for comfort, but the un-supported waist belt must be *worn* snug, thus preventing the fatal "slip-out" accident in a fall.

Other Safe-Hi Safety Belts include Car Dropper's Belt, Grab Belt, Heavy-Duty Construction Worker's Belt and Window Cleaner Belt.

Safe-Hi AUTO SEAT BELT

The "all nylon" Safe-Hi Auto Seat Belt has been safety-engineered to reduce crippling injuries and deaths resulting from highway accidents. The entire belt assembly, including the floor hardware, test far beyond C.A.A. rated strength for airplane seat belts! The 2-inch-wide webbing is 100% nylon, shock-absorbing, very long wearing and easily kept clean. It is light and comfortable to wear, and can be instantly adjusted or released. The Safe-Hi Auto Seat Belt will fit any person, any seat and any car or truck.

OTHER SAFE-HI PRODUCTS

Other Safe-Hi Products include the Safe-Hi Ladder Climber, Chisel Grip, Rope Grab Shock Absorber, Ladder Lash Pole Grip, Wall Grip and Adjustable Bo'suns Swing.

You're sure you've got the best with **Safe-Hi**

rose manufacturing co.

2700 W. BARBERRY PLACE • DENVER, COLORADO

CIRCLE 120 ON READER CARD



Gloves, armguards, and palm pads provide protection when handling sharp-edged stampings.

and hand leathers give increased protection when handling sharp or rough objects. Metal-studded gloves should not be worn around electric apparatus.

Lead-rubber gloves protect the hands against X-rays and the gamma rays of radioactive materials. They are worn by medical, industrial, and nuclear technicians. The glove may include a leather outer covering to prevent damage to the lead-impregnated rubber.

Lead-leather gloves are also worn for radiation exposures.

Linemens' gloves are rubber gloves worn by linemen and others engaged in electrical work. They are of a special type made to exacting specifications. They should be tested regularly and discarded when found worn, cracked or punctured.

For line work, overgloves of leather protect the rubber against damage.

Gauntlets offer some protection to the wrist. When corrosive or hot substances are handled, sleeves should be worn outside gauntlets.



"Work's piling up . . . I'm gonna need a new hand soon!"

Demand QUALITY In Protective Equipment

By FRANK L. WILLIAMS
Division Engineer, Test Bureau
Consolidated Edison Company of
New York Inc.

SELF-PRESERVATION being the first law of nature it is only natural that since early time man has been constantly devising ways and means for his own protection. In our modern society, the safety devices available for his use are numerous, but it has been found, regrettably, in some cases at the cost of life, that safety devices are no better than the quality built into them and the specifications, inspections, and tests that insure this quality. Our laboratory plays an important part in maintaining the quality of personal protective equipment. By personal protective equipment we mean the devices that are used to protect an employee from electric shock, falls, falling objects, suffocation, cuts and bruises.

In Con Edison this equipment is purchased under specifications sponsored by ASA, ASTM, EEI or by company specifications. It is the responsibility of the laboratory to make necessary tests to insure that protective equipment meets all specification requirements.

Adequate protection against electric shock is provided only by proper testing, use, handling and coordination of several protective devices. The most popular item in this group is the high-voltage rubber

This article is based on Mr. Williams' talk at the 30th Annual Convention of the Greater New York Safety Council.



JOMAC GLOVES GIVE CUT PROTECTION
THAT EVEN LEATHER CAN'T

The remarkable cut resistance of Jomac's loop-pile fabric glove is a *plus* that even expensive leather gloves do not provide. Moreover, Jomac gloves offer a better grip on oily surfaces and can be reconditioned time after time.



For maximum hand protection, it's North PVC Gloves. They offer better fit, greater dexterity, more comfort and superior safety in handling chemicals, oils and greases.

To keep outdoor workers dry, comfortable and safe in foul weather, insist on North PVC Wet-Weather Clothing . . . resistant to most oils, greases and chemicals, tough, flexible, non-aging and waterproof.



WRITE TODAY FOR A FOLDER DESCRIBING
THESE PROTECTIVE JOMAC PRODUCTS

JOMAC

Jomac Inc., Dept. D
Philadelphia 38, Pa.
In Canada: James North Canada Company Ltd., Simcoe, Ont.
"Jomac Sells Quality . . . and Quality Sells Jomac!"

CIRCLE 121 ON READER CARD

"LITE-KOTE"

PRODUCTS



NEO-NYLON APRONS

. . . Take the weight off your neck

. . . The toughest and best wearing, light weight apron on the market.

. . . Highly resistant to acids, alkalis, oil, grease, detergents, etc.



NEO-NYLON

WELDERS 3-IN-1

PROTECTOR

Featherweight protection that wears like iron. Outlasts leather. Sleeves and bib both detachable. Weighs only 22 oz.

NEO-NYLON

Split Leg Apron and Shoulder Sleeves

"No sewed seams on any LITE-KOTE product." Flame resistant . . . tear resistant. Every seam vulcanized and guaranteed.



- See your Safety Jobber or send your orders direct to us.
- Complete catalog available

—RACO PRODUCTS DIVISION—

Robin W. Adair Co., Inc.

AVOCA N.Y. TEL 227-228

CIRCLE 122 ON READER CARD

glove. In the Con Edison laboratory, acceptance tests are made on 1,200 ASTH, Class II gloves each month. These tests consist of a thorough surface inspection on both the inside and the outside surface of each glove by trained inspectors working with an illumination of 400 to 500 foot-candles of incandescent light. All gloves must be free from blisters, pinholes, cracks, protuberances, indentations, surface breaks, imbedded foreign matter or other harmful physical defects which can be detected by a thorough test or inspection. An electrical test of 15,000 volts for 3 minutes is applied to 12 gloves at one time in a company designed automatic glove testing machine which we believe to be the fastest glove testing machine in the world. All electrical tests are made with 60 cycles AC voltage. Destructive tests are made on a small sample of gloves. Voltage is applied until breakdown occurs and specimens are then cut from these gloves to determine the physical properties of the rubber such as tensile strength, elongation and set. All satisfactory gloves are then identified by attaching a company rubber label which gives the serial number, manufacturer and the date of acceptance.

As gloves are required on the system, they are withdrawn from stock by the laboratory, inspected and given a test of 12,000 volts for one minute before being issued to the various company groups.

In Con Edison, all high-voltage rubber gloves are used with leather protectors and may be used on circuits where the voltage does not exceed 5,000 volts between conductors or conductors to ground.

After two weeks of use the gloves are returned to the laboratory for retest. A few gloves used as supplementary protection in the handling of switch sticks are returned after two months of use. In no case can a primary glove be used after two months or a supplementary protection glove be used after 10 weeks of its last test date. The laboratory is required to make retests on 7,000 gloves each month.

Each glove is given a thorough surface inspection on both the inside and the outside of the glove and then given a high-voltage test of 4.5 Kv followed by a 12,000 volt test for one minute. Gloves are then disinfected, rinsed in clear water, dried and stamped with the date of test and reissued to the field.

Gloves rejected on inspection with small cuts or scratches in the upper part of the cuff are converted to low-voltage gloves by cutting two inches off of the cuff and attaching a label restricting the use to 350 volts or less.

Other insulating protective devices such as rubber sleeves, blankets, mats, line hose and hoods are handled in a similar manner but with some variations in specified test requirements. All protective devices other than gloves are given a 10,000 volt, 1 minute test on retest.

To insure an adequate supply of insulating protective devices in cases of severe storms, the loss of our supply due to fire or strike at the manufacturer's plant or his loss of source of supply of good porcelain forms, Con Edison has established the following minimum stock: 8,000 rubber gloves; 1,000 sleeves; 1,200 line hose; 300 hoods; 325 blankets and 100 mats.

Insulated tools for both high-voltage and low-voltage use are given an electrical proof test in the laboratory before going into company stock.

For protection against accidental contact when working on low-voltage, rubberized sheeting is provided. Samples of this material are sent to the laboratory for both physical and electrical proof test.

The quality of leather protectors used to protect our rubber gloves and the leather gauntlet work gloves are controlled by specifications and laboratory tests and inspections.

To protect employees from falls Con Edison provides linemen's belts, scaffold belts and bunker belts. These belts are purchased under company specifications which

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FOOT-TOE-LEG
Protection by "Sankey"

(left) Improved FOOT GUARD
(Style #200 illustrated)

FOOT GUARDS consist essentially of a metal shield to be worn over the shoe whenever the foot is in danger of being either crushed or cut. The metal shield is designed to furnish a maximum amount of protection to the entire foot — not merely to the toes alone, but also to the instep — against hazards from falling, rolling or flying objects, or from accidental tool blows.



TOE GUARD ▶ fills a demand for toe protection in occupations where hazards injurious to toes exist. They fit any shoe, afford maximum toe protection, and like the foot guards do not encase the toe to the discomfort of the worker. (Style #702 illustrated.)

Fibre Shin &
Knee Shin Guards

are formed to the contour of the leg, are light weight, comfortable to wear, allow absolute freedom of leg motion and provide the utmost in protection.

Fibre shin guard (right) style #300. Fibre knee-shin guard (far right) style #310.

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225 SIXTH ST. — NSC ELLWOOD CITY, PA.



CIRCLE 124 ON READER CARD

require that belts be fabricated with nylon webbing and company tested hardware. All new belts are inspected and then given a tensile proof test. A sample of webbing is furnished with each shipment for a breaking strength test. A single thickness of 1¾ inch nylon webbing used in our pole straps has withstood pulls of 10,000 pounds.

All belts are returned after six months of use for inspection and a tensile proof test of 800 pounds. Body straps, however, are tested at 650 pounds.

Protection from falling objects is obtained by the use of hard hats. These are purchased under EEI specification for Electrical Workers Insulating Safety Headgear. A five percent sample of each shipment is sent to the laboratory. Here each hat is subjected to an impact of 40 foot pounds in a special testing machine. The temperature of the chamber at the bottom can be varied from 25°F to 160°F. Another test is to drop a Plumb Bob from a height of 10 feet.

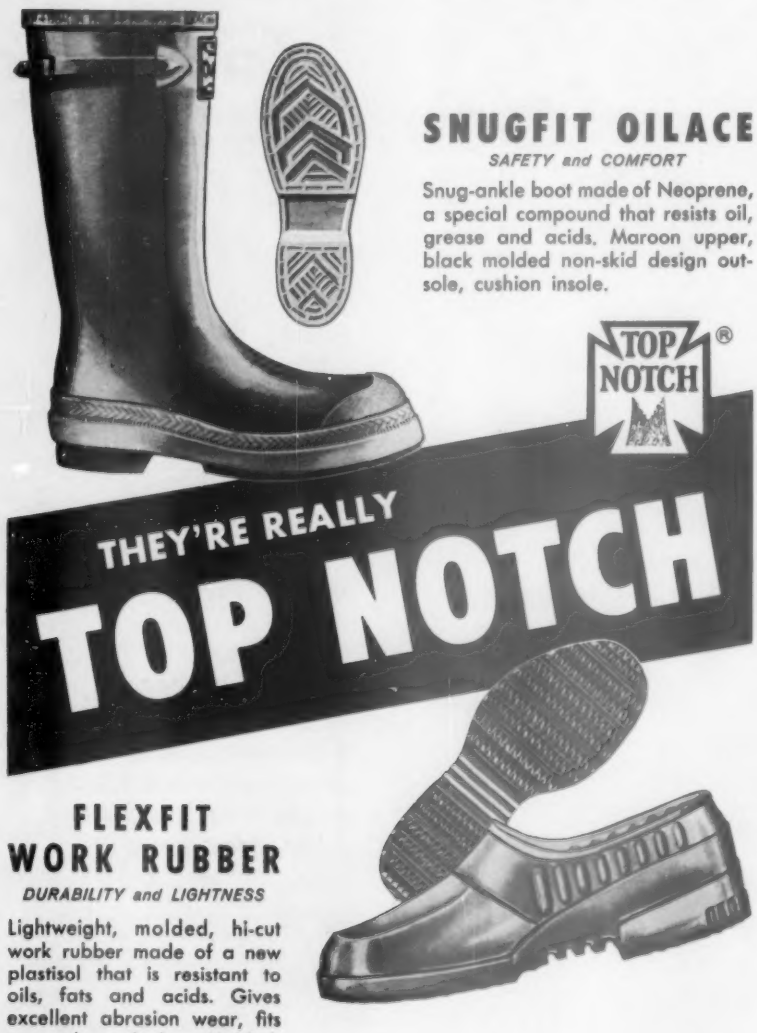
The electrical tests consist of applying 15,000 volts, 60 cycles for one minute between water on the inside and on the outside of the hat. The ultimate electrical breakdown must be over 20,000 volts.

The physical tests consist of determining the dimensions and weight. Specimens are then cut from the hats for water absorption and flammability tests.

Fresh air masks are used to provide the employee with a supply of fresh air when working in a contaminated excavation. These masks receive an acceptance test before being issued to the field and are returned to the laboratory after 12 months of use for a retest. A thorough inspection is made of each item making up the fresh air mask assembly and the operation of all valves are carefully checked.

The breathing tubes and the air supply lines are subjected to an air pressure test underwater, while the harness consisting of shoulder straps, belts and hardware are given a tensile proof test. The shoulder straps are given a 250 pound test while the belts, rings and attachments are given a 300 pound proof test.

The modern laboratory cannot be content with simply making acceptance tests on equipment being used for personal protection or on the retesting of same. It must be awake to the constant need of developing new and better devices to protect the employee of today and tomorrow. Simpler and better methods of test are always in need. In Con Edison we have been investigating such tests as power factor and dielectric constant. We should keep an eye on the rapidly advancing field of nondestructive testing. Here we may find some tools that may be adopted to the testing of personal protective equipment. The laboratory must always be mindful of its responsibility in maintaining personal protective equipment in first class condition through laboratory testing.



CIRCLE 102 ON READER CARD

CIRCLE 112 ON READER CARD



SEECLOTH

The largest companies in the country give their workers SEECLOTH for fogproofing goggles & windshields. WHY?

BECAUSE —

1. It is the most convenient and economical method known for fogproofing goggles or windshields. The cloth lasts for as long as a year if kept clean and dry.
2. It saves the worker's time. He doesn't have to go anywhere to do anything about his goggles —he has the means of fogproofing them right in his pocket.
3. If he fogproofs his goggles in the morning and after lunch, while his hands are clean, by wiping them with SEECLOTH, the goggles stay clear all day long and the cloth stays clean.
4. In truck fleets and bus fleets the larger pieces of SEECLOTH fogproof the windshield and prevent accidents. One fogproofing a week is usually sufficient to keep the windshield clear.
5. SEECLOTH is made in a variety of sizes, namely, 3" x 8" strips and also 8" x 9", 12" x 18" and 16" x 18" pieces individually packaged in polyethylene envelopes.



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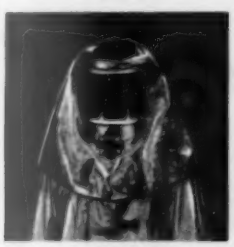
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New protection from chemical hazards. Made of popular GREENWEAR. For use with Air Supplied Respirator.



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Patented Leg Safe, and spring knee styles. Quick off.



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Fiberglas frame with hard hat or cradle headgear. Picture window vision.



GLOVES AND MITTENS
Exclusive Wheeler weave asbestos and green flameproofed lining.



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New aluminum case with quick release catch.

CIRCLE 126 ON READER CARD

Belts and Harnesses

—From Page 172

warm water and saddle soap or mild soap. Rinse in clean, warm water and dry at room temperature.

Treat with neatsfoot, castor, soybean, or a compound oil, not a mineral oil.

Never expose to excessive heat.

Watch carefully for cuts or scratches on the skin side of the hide. Condemn if there is a deep cut on the skin side.

Webbing. Fabric belts should not be worn if outer plies are cut or worn through.

Wash in soapy water, rinse and dry in moderate heat. They will stand any heat up to the boiling point of water.

Consult manufacturer about dressing.

Hardware. Check and replace if it shows signs of wear. If riveted, examine each rivet carefully.

Inspection. Employees who wear belts should inspect them before use. An experienced inspector should check them every 1 to 3 months.

Life lines. Wash with mild soap and water and dry in circulating air. Do not expose to high temperatures. Keep rope in open coils; never bend sharply.

Auto Seat Belts

A recent survey of accident investigators indicated that seat belts could have prevented more than 42 per cent of fatalities in 400 cases studied. The use of auto seat belts is of proven benefit in preventing death or serious injury.

But the protective value of the belt will depend largely on the quality of the belt and method of installation.

The variety (and varying quality) of belts on the market today makes it advisable to buy from a reputable dealer. The Automotive Crash Injury Research Group at Cornell University recommends that:

1. Loop strength of belt and buckle be at least 3,000 lbs.
2. The belt be at least 2 in. wide.
3. Only one person be supported by a belt.
4. The buckle be simple to operate and easy to release.
5. The belt be anchored to the car frame, not the seat.

Seat belts must be comfortable and convenient to use, and be worn at all times. For maximum protection, they should have not more than 4 in. of slack—not too tight or too loose.

Leg Protection

Workers exposed to the hazards of hot materials, corrosive substances, blows from sharp tools or heavy objects, and poisonous snakes need extra protection for their legs. Among garments commonly furnishing this protection are:

1. Spats
2. Leggings
3. Shin guards
4. Knee pads

Leggings. For men who are exposed to direct or conducted heat, as in foundries and steel mills, leggings are available in asbestos chrome leather and flameproofed duck in spats, knee-length, and hip-length. For radiant heat aluminized asbestos and duck are worn.

Where molten metal is handled, leggings should have flares to protect the instep. They should be free from projecting buckles and clasps and be instantly removable.

CIRCLE 127 ON READER CARD



JUST WON'T SLIP!

STYLE NO. 411

The rough finished latex coating of this Granet SLIP-NOT glove provides thousands of gripping edges that really bite . . . like a tread on a tire. It just won't slip! A rugged, general purpose work glove . . . ideal for handling lumber, concrete, metal, glass and other 'hard-to-handle' materials.

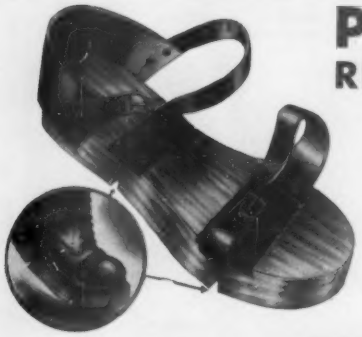
Whether you are concerned with grease, chemicals, mechanical abrasion or other hand protection needs, check the Granet Line of gloves first.

Write . . . on your letterhead for a free pair. Test them yourself!

Granet Gloves . . . manufactured under stringent quality control methods . . . are guaranteed as first quality.

THE GRANET CORP.

25 LORING DRIVE, FRAMINGHAM, MASS.



PROTECT Your FEET
REECE WOOD SOLES

Light weight—strap on quickly over any shoe —walk safely on chips, hot ovens, cold floors.

Heatproof—Punctureproof—Coldproof

Also manufacturers of Reece E. Z. Walking WOOD SOLE SAFETY Shoes—STRONG STEEL TOE—High and Roomy —Keep workers SAFE on the job.

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No. 351
Sizes—Small - Medium - Large
No. 251—one hinge

REECE WOOD SOLE SHOE CO.
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CIRCLE 128 ON READER CARD

For protection against corrosive and relatively harmless liquids, leggings are available in knee and hip lengths and a variety of impervious materials.

Impregnated duck offers protection against moisture and detergent solutions.

For more severe exposures, fabric coated with plastic, natural rubber, or neoprene gives greater protection.

Plastic resists oils, solvents, mild alkalis, and acids.

Rubber offers protection against concentrated acids, alkalis, and salts.

Neoprene resists oils and organic solvents.

For more severe exposures, fabric dampness and corrosive liquids, there are boots of natural rubber, synthetic rubber, and plastic. These are available in knee and hip lengths, also waders similar to those used by duck hunters and fishermen.

Where poisonous snakes are a hazard, heavy leggings or high boots are worn by construction, public utility, and farm workers.

Shin guards of metal or fiber provide important protection where axes or adzes are used. Shin guards are available separately or combined with metal foot guards which cover the instep.

Foot Protection

—From Page 164

shops and while operating power lawn mowers.

Safety shoes are now available in a great variety of types for occupational needs. Soles and heels may be obtained in leather and in combinations of rubber or neoprene with cord and cork.

Leather for both soles and uppers can be obtained in grades resistant to moisture and some chemicals. Compounds for preserving and waterproofing leather are available.

Standards

American War Standards, Z41 Series, American Standards Association, are still useful guides for purchasers of safety shoes.

Specifications call for a well-constructed, durable work shoe with a toe reinforced by a steel box. The box is supported on a flange resting on the sole. It must support a static load of 2,500 lbs. and resist the impact of a 50-lb. weight dropped 1 ft.

When subjected to either test, the inside of the toe box must not come closer than ½ in. from the upper surface of the sole.

Strength requirements for shoes for both men and women are identical.

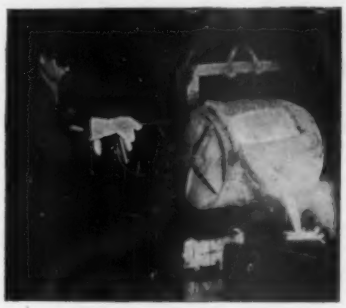
Distribution

To secure acceptance of foot protection, safety shoes must be comfortable and properly fitted. Purchasing must also be made convenient.

Many large companies maintain well equipped stores with a wide range of lasts and sizes and trained attendants to fit the shoes. Shoes are sold at cost on the payroll deduction plan. Safety shoes are sometimes awarded as contest prizes.

Smaller plants are not always in a position to stock an adequate

CIRCLE 129 ON READER CARD



The HEAT'S OFF with LIBERTY ALL-LEATHER HEAT RESISTANT GLOVES

These gloves are not ordinary work gloves, but are made from a patented process on soft, flexible leather, impregnated with insulating and refractory materials.

They have outworn ordinary work gloves six to eight times on many operations. Temperatures from 500 degrees F to 800 degrees F can be safely handled, depending upon the type of glove required.

Not only do they afford protection to the hands, but many hot materials can be handled without tongs or other equipment, thus saving both time and money.

If your dealer cannot supply you, we would be pleased to receive your inquiries.

LIBERTY PROTECTIVE LEATHERS, Inc.

14-16 FOREST ST. GLOVERSVILLE, N.Y.

20 Years Service in Supplying SAFETY EQUIPMENT AND APPLIANCES

DRAEGER MULTIGAS DETECTORS — INDICATORS AND DUST SAMPLERS
BREATHING RESISTANCE TESTERS FOR BREATH. APPARATUS, GAS MASKS AND RESPIRATORS
ACME GAS MASKS — RESPIRATORS
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Eye Protection, Face Shields, Helmets, Hoods, Masks, Safety Signs, Cans, Faucets, Safety Belts, Stretchers, Fire-Blankets, Protective Curtains, Eyewash Fountains, Emergency Showers, All Types Safety Lights, Safety Smoking Stands, Non-Slip Floor Coatings, Spark-Flame Arresters, and many other types of Safety Equipment.

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For earlier ambulation after injury (or surgery)
Originally developed for the U.S. Army

✓**Laces front and back** — opens to the sole to accommodate heel or forepart injury.

✓**No counters** to irritate.

✓**Extra wide tongues** — (attached under insole to prevent irritation) permit fitting to edematous or heavily bandaged feet.

✓**Singles, pairs;** 6 to 13, EE or EEEE. Full sizes only.

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*Creators of the Hack-O-Pedic Club Foot Shoe, the TRI-BALANCE® Shoe and the *RIPPLE® Sole.*

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Seiberling
INDUSTRIAL GLOVES



EXCLUSIVE PATENTED
FIRMGRIP®
SAFETY GRIP
MOULDED INTO FINGERS
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Longer wear in every pair! Available in various sizes, gauges, lengths, colors and surface finishes. Natural rubber or genuine Dupont neoprene latex. Contoured fingers for more comfort, better fit.

SEND FOR CATALOG NO. G-6 of complete glove line

FREE TEST OFFER!
Write us on your firm's letterhead for sample gloves for test purposes.

SEIBERLING LATEX PRODUCTS, New Bremen, Ohio

CIRCLE 132 ON READER CARD

range of sizes or provide expert fitting service. Many companies make arrangements with local dealers whereby employees may purchase shoes through payroll deduction.

A mobile shoe service is offered by dealers in some areas. A truck equipped as a shoe store is manned by an experienced fitter who is responsible for all adjustments. A variety of styles and full range of sizes are carried. Periodic visits are arranged and between visits shoes can be obtained quickly on special order.

This service is rendered on a moderate mark-up basis and the plant can charge the employee any part of the cost.

A worker should have more than one pair of safety shoes so they can be rotated. Shoes will last longer and be easier on the feet. The wearer will also have a pair available while the other is being repaired.

Records for each employee should be kept. A 3 x 5 in. card shows name, department, payroll number, and details of each transaction. These include date, stock number, size, width, price, and payment. The reverse side of the card carries such information as history, details of any foot trouble, and other comments.

Types of Shoes

Safety shoes, generally, are well made on lasts designed for comfort. They are available in many types and styles, some suitable for street wear. The protective toe box does not add appreciably to the weight or cost of the shoe.

General purpose shoe. The most widely used type is the blucher oxford. It is available in a wide range of sizes, widths and lasts, ranging from rugged, heavy-duty styles to those suitable for street wear. It is the basic type, with certain differences in detail for special occupations.

Low cut shoes (oxfords) are satisfactory for many occupations. Where the ankle is exposed to sparks or molten metal or chemical splashes there should be no gap between the shoe top and the trousers. High shoes, spats or leggings should be worn.

Foundry shoes. An early type of safety shoe still in use is the foundry shoe with elastic panels at the sides. There is no opening on the instep

CIRCLE 133 ON READER CARD

RICHLON
ACID & CHEMICAL RESISTANT CLOTHING
BY Woolrich

Keeps Workers Safe!
Cuts Costly Injuries!



BETTER FIT
GREATER COMFORT
LONGER WEAR

Shirt: Style No. 60
12 oz. Navy Blue
(100% wool)

Pants: Style No. 1430
18 oz. Grey
(100% wool)

Tough, resistant RICHLON Industrial Clothing armors your workers against acid and corrosive chemicals. Absorbs moisture — protects against dermatitis. Wrinkle resistant and color fast. Available 60% orlon-40% wool or 100% wool. Many styles to choose from — all at low cost.

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WOOLRICH WOOLEN MILLS
WOOLRICH, PA.
Famous Name in Woolens Since 1830

where molten metal or hot sand can penetrate and the shoe can be pulled off quickly in an emergency. This model is furnished with steel box toe.

Spark-proof shoes. Shoes with brass hooks and eyelets and brass nailed heels are worn in some industries where sparks from iron or steel might ignite flammable gases.

Shockresisting shoes, designed for work around electric equipment, have no metal parts except insulated steel box toes. They are also worn by those handling flammable materials, by workers in explosives plants, and in grain products refining operations.

Where it is felt that impact resistance must be compromised with the need for insulation, toe boxes of fiber or plastic are sometimes used. Such shoes, however, are not classed as "safety" shoes.

Conductive shoes are designed to drain off static charges to prevent their building up in the body to the point where they could cause a spark.

The conductivity of these shoes is affected by other conditions. Wool, natural silk, and nylon socks act as insulators to the body; cotton, lisle or rayon are satisfactory. Foot powder also serves as an insulator.

The floor as well as the shoes must be conductive.

Insulated shoes. Where feet are exposed to extremes of heat or cold, shoes with heavy insulation give needed protection.

Instep protectors. Some models have tough, shock-absorbing guards over the instep. These provide added protection without hampering movement of the feet.

Toe clips. Where men will not or cannot wear safety shoes, steel clips nailed to the shoes or attached with spring clips can be provided. These are sometimes used by temporary crews but are not substitutes for safety shoes.

Rubber footwear. Where work must be done in deep mud or in water, rubber boots contribute to health, comfort, and safety. Rubber boots are available with steel box.

Soles and Heels

Slip-resistant soles and heels are good for general use since slipping hazards are frequently found where they are not expected. No type of footwear, however, is a substitute

CIRCLE 134 ON READER CARD

Safeguard Your Workers!
Prevent Costly Injuries!

WOOLCAN
HEAT & FLAME RESISTANT CLOTHES
BY Woolrich



COATS • PANTS • SHIRTS
. . . Heavy Loomed Fabrics of 22 & 32-oz. 100% WOOL

Best Protection of All for Steelworkers, Smelters, Furnace Operators, Workers around heat and flame in all kinds of Industries!

Heat-insulating and flame-proof Industrial Clothing at sensible prices. Non-flammable! Rugged seams. Perfect body proportions assure comfort and freedom of action. Many styles to choose from . . . coats, shirts, pants!

WRITE FOR FREE BROCHURE "W"

WOOLRICH WOOLEN MILLS
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Famous Name in Woolens Since 1830

CIRCLE 135 ON READER CARD

Careless Smoking is a Universal Problem!



SIPCO

DUNKING STATIONS



Promote Good Housekeeping
Prevent Fire Hazards
Reduce Maintenance



Model 4J-R Duo-Tone With R-G Sign

WHEREVER A SMOKING PROBLEM EXISTS, THERE IS A SIPCO MODEL THAT EXACTLY FITS THE NEED.

SIPCO smokers are constructed of heavy-duty cast aluminum — Built for a lifetime of hard use. OVER 20 DIFFERENT MODELS, include MIDGET size, STANDARD size and JUMBO size. WALL models, FLOOR STAND models and PERMANENT MOUNTING models. DELUXE bright polished finish — or DUO-TONE finish (Grey crinkle canister with satin finished lid.)



Model 4J Deluxe

MODEL 4J DELUXE (Illustrated) JUMBO size permanent mounting type with bright polished DELUXE finish. Glass fiber inner-liner is furnished.

MODEL 4J-R DUO-TONE (Illustrated) JUMBO size permanent mounting type, with sign. Wide variety of sign wording available. Glass fiber inner-liner furnished.

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ACCIDENT PREVENTION MEANS GREATER DOLLAR SAVINGS

APRONS
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Protective APRONS



BASCO Hycar and Neoprene Aprons give durable, long service, with exceptionally high resistance to grease and hazardous cutting oils. BASCO Aprons guard your workers against water, acids, and alkalis, will not swell and have excellent abrasion resistance.

BASCO Aprons are constructed with heavy duty hemmed edges with reinforced sturdy metal grommets.

Also available BASCO Neoprene and Hycar Split Leg Aprons and Sleeve Aprons for positive leg, shoulder, and upper arm protection.

BASCO Aprons are available in 16 to 28 gauge Hycar and Neoprene with your choice of colors — yellow, maroon, white, and black.

Also BASCO Virgin Vinyl Plastic Aprons give positive protection at lower cost.

Write for complete price lists. Samples available upon request.

associated bag & apron co.
909 West Huron St. Chicago 22, Illinois
Telephone: CHesapeake 3-1090
BĀSCO

CIRCLE 136 ON READER CARD

for good housekeeping. Even nonslip soles and heels cannot provide a sure footing where there are heavy accumulations of oil, grease, and other slippery materials.

Leather is comfortable and durable for normal conditions. Leather does not give satisfactory service where heat is excessive or where the shoe is subjected to constant dampness.

Rubber is resistant to moisture, alkalis, and most acids. It deteriorates quickly when exposed to grease, oil, solvents, some acids, or excessive heat.

Neoprene resists moisture, also grease, oil, and solvents that would ruin rubber. It stands up well against cutting and abrasion.

Cord incorporated in rubber or neoprene, similar in construction to automobile tires, gives good traction and wear under severe conditions.

Cork blended with rubber or neoprene provides good slip resistance and the soles are light and flexible. Cork also helps to insulate feet against heat or cold.

Wood soles are used for extreme conditions of heat, dampness, oil, acids, or caustics underfoot. They are worn in steel mills, foundries, for handling asphalt and other hot operations. They also afford protection against nails, broken glass, scrap metal, and other sharp objects.

Wooden-soled shoes can be obtained with steel toe boxes or with guards which cover toes and insteps.

Foot Guards

Where unusually heavy objects are handled, feet may need more protection than shoes with reinforced toes. For such work, there are foot guards of heavy-gauge, flanged, and corrugated metal.

The guards are strapped on over the shoes and protect the instep as well as the toes.

With the flange resting on a firm floor surface, foot guards should stand an impact of at least 300 foot-pounds without being dented sufficiently to damage the shoe underneath or injure the foot.

Foot guards are also made with soles of rubber or calked steel to minimize slipping hazards.

Combination shin-foot guards, with an aluminum alloy shin protector hinged to the foot guard, are available.

CIRCLE 137 ON READER CARD

FROMMELT

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Gloves Are Cheaper

—From Page 142

top of the glove, the base of the fingers, the entire thumb seam and the cuff seam. Note that soft welts help make comfortable seams, and a glove must be comfortable if it is to be used.

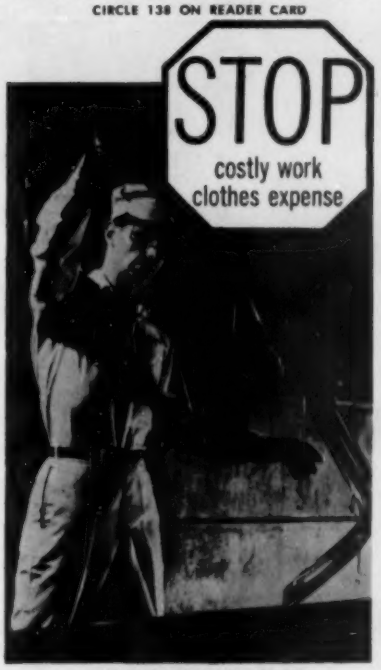
The back of the glove should be of one-piece seamless construction to eliminate the vulnerable seam in this critical area exposed to metal flow. Added comfort is another benefit. However, spot welders are not usually exposed to heavy metal flow in this area and thus will often use the less expensive two-piece seamed construction.

Another important group of gloves with heat protection properties is the terry cloth family. Gloves made of this fabric are effective against *dry* heat only. The looped pile of terry cloth provides thousands of tiny air pockets that act as insulation. The important feature to look for is the amount of pile. The fabric comes in 22-oz and 24-oz weights. The backing on both is the same—the difference is in the height of the pile. Once the backing is penetrated, the glove becomes worthless. The higher the pile, the longer the glove will wear before the backing is penetrated, and the more air pockets the glove has for added heat protection.

Terry cloth has other benefits too. It gives greater protection against rough surfaces and sharp cutting edges than many other glove fabrics. This is because most unnapped glove fabrics, compared to terry, are stiff or rigid—they present a firm surface for a sharp edge to cut into. But the high pile on terry is flexible. Like a smart fighter who rolls with a punch, the pile gives, and does not offer the rigid surface to cut into. You can test this yourself by placing a leather glove and a terry side by side, place a piece of paper over each, and then with a sharp razor firmly cut through the paper. The leather glove will be cut—the terry won't. A dramatic example that the higher the pile, the more protection afforded.

If you work with chemicals, chances are you will be buying one of the different types of coated

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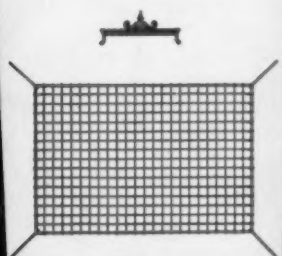


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gloves. Here the problem is to determine which coating offers the best protection against the particular chemicals you use. For instance, a neoprene coated glove offers excellent resistance to inorganic acids such as hydrochloric. However, it offers only fair protection against most hydrocarbons, and poor protection against carbon disulfide. For carbon disulfide a rubber coated glove is best, but it offers poor protection against nitric or sulphuric acid. Vinyl coated gloves are excellent for use with many acids, but poor against ketones such as methyl ethyl ketone. Charts showing the various physical and chemical resistance properties of different coated gloves are generally available from many glove suppliers.

This emphasizes a very important point. With all the different types of gloves available, it is impossible for you to know everything you should know to help you provide the most effective glove for your needs. Your glove source should have this information.

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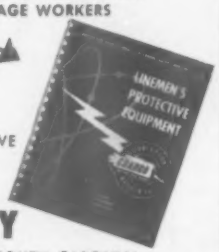
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SECTION 7

MATERIALS HANDLING

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Reduce Handling— Modernize Facilities

By JOHN A. CHURCHILL



John A. Churchill is supervisor of safety engineering, Allis-Chalmers Manufacturing Company, Milwaukee. He has been in the Allis-Chalmers safety department since 1943, a safety engineer since 1955, and has recently joined the corporate safety staff, which directs company-wide safety activities. He is the author of several articles on die guarding, power press safety, and materials handling. He serves as a member at large of the Milwaukee chapter of ASSE, and is a member of the Milwaukee Technical Council, an organization of all Milwaukee technical and scientific societies.

AS LONG AS material handling injuries continue to be a major safety problem and material handling costs constitute a major portion of the complete production dollar, the need is evident for continuous emphasis toward the reduction of handling requirements and the modernization of handling facilities.

What has been done? The past 10 years have seen a concerted attack on this problem. Surface handling facilities have been improved through purchase of powered industrial trucks and installation of roller and belt conveyors. Unitization of loads on pallets, skids or other standardized bulk containers has followed, materially reducing the number of handlings required.

Overhead hoisting facilities have also been expanded, including use of chain conveyors for the transportation and storage of individual parts or subassemblies in the manufacturing process.

What is the safety result? Facilities provided have reduced the number of manual handling injuries sustained and handling costs involved. In many instances, they have also resulted in a number of high severity injuries due to the mechanical exposure involved.

Why has this occurred? Experience has shown the basic engineering failed to consider all necessary controls and safeguards which would result in accident-free operation.

The basic tool, be it truck, hoist, conveyor, or other equipment, has not been a problem. Implementation of these tools into the production process or facility and the design and application of auxiliary equipment has been the problem.

Additional powered truck traffic in existing narrow and already congested shop aisles has resulted in increased collision and pedestrian injuries. Inadequate receiving and shipping docks have taken their toll. Bottlenecks have appeared particularly when the automated process feeds into further shop operations.

Vertical movement in multi-stored operations has not progressed at the same rate, particularly in heavy industry. These and other problems have developed.

Training in the safe operation of new and specialized equipment has sometimes not met requirements for intelligent operation. In some respects, the number of personnel operating powered equipment has increased, necessitating expansion of the necessary training program.

What must be done? The safety engineer must give this problem the time and attention it needs in relation to accident experience now occuring. He must be concerned primarily with integration of handling changes into the over-all production picture, searching for undesirable side effects resulting.

To do so, he must be more completely informed on equipment and layout under consideration. Specifying that equipment must be safe and in compliance with state or industry safety codes is not sufficient. In this age of specialization, the associated engineering services — in most cases a material handling specialist — can be expected to know the function and capabilities of available equipment more precisely than ever.

He may not be as well acquainted with the associated accident problem which exists or the potential which can be anticipated. He should welcome specific recommendations or questions leading to improvement of the proposed installation.

What is ahead? Material movement will always be a major part of any manufacturing process. As the handling phases are reduced through more complete mechanization, movement phases become increasingly important. We can expect further refinements in designs and new developments in all fields.

We can predict the commercial use of high-purity steels will soon provide for development of more efficient chain, wire rope, and similar equipment. Used at higher hardness ranges, they will provide greater safe load capabilities without the sacrifice of toughness or ductility.

As these major changes occur, the safety engineer may expect that some existing criteria will have to be re-evaluated and modified to suit the change while achieving an even greater safety reliability.

Handling Can Be Hazardous

If methods are inefficient, repetitive

HANDLING INDUSTRIAL materials creates accident risks. If objects are moved manually, there is the chance of strains or injury from dropped objects. If mechanical devices are used, they may be potential accident sources.

Often, the most efficient method of handling will also be the safest —since reduction of the number of times an object is handled reduces the exposure to risk.

Training of operators and maintenance of equipment are important.

Where manual handling is necessary, men should be trained in the safest and easiest methods. Their fitness should be determined by preplacement examinations and job studies.

Manual Handling

When an object is to be handled manually, its weight, height to be lifted, and distance to be traveled are important factors. Operating conditions may bring exposures that cannot always be predicted.

Exposures. Simple equipment is often needed for manual lifting and transporting. Training, supervision, and housekeeping will help control these:

1. Incorrect methods of lifting and carrying.
2. Attempt to lift weights beyond the worker's capacity.
3. Lack of coordination when men lift together.
4. Cluttered aisles, floors, or stairs.
5. Failure to use equipment.
6. Showing off.

Aids for the Job

Hooks, ranging from hand held to highly adapted types, are used for handling logs, lumber, crates, boxes, and barrels where the object will not be damaged. Hooks should be inspected daily and kept sharp. If a hook is carried in the belt, the point should be covered.

Bars. The point or edge of a crowbar should be kept sharp and position of hand and body should minimize the chance of pinching or falling if the bar should slip or the object moves suddenly.

Car movers, not crowbars should be used to move cars on steel rails.

Rollers are used for moving heavy, bulky objects. A sledge or bar, not hands or feet, should be used to move rollers under loads.



By stacking the job right the first time, this fork lift operator cuts down the chance for injury.

Mechanized Handling

Mechanized handling equipment poses safety problems. When such devices are used, strains are minimized but falling object and collision accidents (with crushed hands and feet) may increase significantly.

Injuries from operating of mechanical devices may usually be traced to:

1. Objects falling from carrier.
2. Inadequate training of operators.
3. Faulty plant layout.
4. Horseplay.
5. Devices inadequate for the job.
6. Failure to use available equipment.
7. Excess handling between operations.
8. Poor housekeeping.
9. Lack of guards or other safety devices.

Organization for Handling

Purchase of an industrial truck or a handling device is not sufficient to bring any significant reduction in accident frequency. An organized plan should cover:

1. Study of accident occurrence.
2. Determination of location and types of accidents.
3. Inspection of conditions and study of causes of accidents.
4. Correlation of accident data and inspection findings.
5. Correction of physical causes of mishaps.
6. Provision of adequate guards and safety devices.
7. Promulgation of rules for safe operation.
8. Training and licensing of operators.
9. Supervision and follow-up.

Plastic Tape Guides Visitors

Also speeds firm's handling operations

MORE THAN A MILE of plastic pressure-sensitive tape guided visitors through the new Owens-Illinois Paper Products Division plant near Shakopee, Minn., during a recent two-day open house.

The bright red tape was applied in strips to the cement floors of the building, near the steps of outside entrances, on loading docks, and even on asphalt driveways. Why?

1. Because of its quick and easy application. Readily conformable, it can be adhered to any surface.

2. It remains adhered as long as desired, yet can be readily removed.

3. It does not interfere with plant operations. Unlike temporary stanchions, the tape cannot get in the way of workers and equipment such as fork lifts, trucks, and other wheel conveyances.

4. It resists scuffing and rough treatment from foot traffic and heavy equipment.

5. It can be cleaned easily and rapidly, even wet-mopped.

The tape, officials pointed out, not only eliminated costs and time of erecting stanchions such as guide ropes and posts, and painting of guide lanes and markers, but also cut down on the number of guides and other personnel usually required for such a tour.

And since there were no stanchions to get in the way, there was no need to maintain a constant check to see if markers were in place. Tourists reported it was easy for them to follow the tape near their feet.

The flexible tape was applied by simply pressing one end against the surface to be marked, and then dispensing the length of tape desired. A blade severed the tape and the entire strip was then applied against the surface by foot pressure. A few steps of the foot against the tape backing assured maximum adhesion.

The plastic tape can be formed into many different designs. It was formed into lanes and arrows at the Shakopee event to designate route direction.

When the tour was over, the tape was removed readily by peeling it from the surface.

Officials estimated that approximately 2,700 persons toured the Shakopee plant. Despite all of this wear, the tape remained firmly in place.

The tape, a product of Minnesota Mining and Manufacturing Co. (3M), is a vinyl plastic tape available also in black, blue, brown, green, orange, white, yellow, and transparent.

Handling Material Causes Quarter of Work Injuries

From the caveman's crude wedge to the modern bucket conveyor, traveling crane and fork lift truck, materials handling has been an important source of injury to workers, says a government safety bulletin.

Modern mechanical handling, while decreasing dangers of manual handling, has increased hazards.

Despite increased mechanization, almost 25 per cent of all disabling injuries in industry still occur in materials handling operations, and "Mechanical factors are more subject to control than are human factors involved in handling materials by hand."

The pamphlet defines and illustrates many types of conveyors; derricks, cranes, and hoists; powered industrial trucks; and ropes, cables, and chains. The importance of and standards for designing safety into the manufacture of such equipment are discussed.

Rules for safe operation of the various types of equipment, as well as hand or whistle signals, are given and—where necessary—accompanied by instructional drawings. Tables are included for safe working loads on ropes and cables based on the recently adopted federal safety code for ship repairing.

Sample copies of Bulletin No. 219, *Mechanical Handling of Materials*, one of the government's safety-in-industry series, may be obtained from the Bureau of Labor Standards, U.S. Dept. of Labor.



Hoist Your Heavy Work

Hand and power hoists, or cranes, can do the job

RAISING OR LOWERING loads through a vertical plane is most often accomplished by a hoist, either mechanical or powered.

Among the common types of hoists are:

1. Hand operated hoists.
   Block and tackle.
   Hand chain.
2. Power hoists.
   Electric.
   Pneumatic.
3. Cranes.
   Overhead traveling.
   Jib cranes.
   Mobile.

Safety hooks on cranes, hoists, and other lifting equipment prevent the load from jarring loose from the hook until the hook is unlocked manually. The latch also acts as a gauge to indicate whether the hook is sprung or not.

Block and tackle. Blocks threaded with fiber or wire rope are used for raising and lowering scaffolds, hoisting objects, and other industrial purposes.

When used to lift heavy materials or to hold loads suspended, as on heavy-duty scaffolds, wire rope is more serviceable than fiber rope. Wire rope is too stiff for manual handling and requires a winch.

Hand chain hoists may be used where overhead cranes cannot be installed because of lack of head room. They also handle heavy pieces at machines. One hoist may handle the work at several machines.

Chain hoists may be portable, portable but permanently hooked onto a monorail trolley, or built into the trolley as an integral part.

Steel is recommended for load-sustaining parts. It withstands sudden shock better than cast iron and is lighter in weight. Chain should be welded, and of quality steel.

Each hoist should be equipped with a braking device which automatically locks the load when hoisting is stopped.

Chains and sheaves should be lubricated at intervals, depending on atmospheric conditions.

Electric hoists should be provided with rope or other nonconducting control cords. Each rope should be marked "hoist" or "lower." One method is to use an arrow pointing in the direction in which the load will move when the rope is pulled.

Limit stops prevent the hoist from traveling too far in case the operating handle is not released in time.

All hoists, electric or otherwise, should be attached to their supports (fixed member or trolley) with shackles or support hooks, and should be moused or provided with safety latches. Latches are also recommended for load hooks.

Air hoists, operating on compressed air, are used where sparks from electric equipment might be a hazard. The air hoist is limited in travel because of dependence on air lines.

Portable floor cranes are mounted on wheels and can be moved either by hand or under their own power. These raise and lower loads in a vertical line. They will not rotate around a fixed point.

Portable cranes are useful in plants where overhead belting or shafting prevent use of overhead cranes, and where service is not frequent enough to justify more expensive equipment.

The lifting mechanism may consist of a winch with wire rope and block, or a chain hoist, operated by hand or electric power.

Electric hoists should be grounded to prevent shock in case of short circuit.

Jib cranes lift, lower, and rotate loads within the arc covered by a rotating arm or jib upon which runs a trolley. The jib is usually supported from a wall or column. A



Roll storage operator runs lift device which wafts 900-lb rolls of film into storage racks.

hoist, hand-operated, air, or electric, is suspended from the trolley.

Dockboards

Movable plates for bridging the gap between loading platforms and carriers are needed for both hand and power trucks. Dockboards are usually of steel or light weight magnesium or aluminum alloys.

Sides should be turned up at right angles to prevent trucks running over the edge. Handholds facilitate handling.

Dockboards should have a high friction surface to prevent slipping of vehicles or persons. They should be designed so when they are in position the ends will have substantial contact with the loading platform and the carrier to prevent rocking or sliding when in use.

Some positive means of anchoring is necessary to prevent dockboards from accidentally slipping out of place.

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(See also manuals published by manufacturers of equipment and their trade associations.)

Trucks Move the Product

But each type of vehicle has its problems

HAND AND POWER TRUCKS keep goods moving through factories, warehouses, docks and railroad terminals. Types for a variety of hauling and lifting jobs are available. Each presents special safety problems.

Industrial power trucks are operated by engines using gasoline or liquefied petroleum gas or by storage batteries. Many trucks designed for gasoline have been converted to LPG.

Catalytic exhaust purifiers on trucks powered by internal combustion engines permit their operation indoors where there is normal ventilation.

Power trucks should comply with code specifications for fire protection. These are minimum requirements for ordinary locations. For hazardous locations requirements are much stricter.

Hazardous locations are defined by the National Electrical Code as places where the following may be present:

Class 1. Flammable gases or vapors.

Class 2. Combustibles.



An extending device on this lift truck enables it to serve on overhead maintenance jobs.

Class 3. Easily ignitible fibers or flyings.

The Safety Code for Industrial Power Trucks (ABAB56.1) stipulated that electrical or gas-powered trucks may not be used in these locations unless specifically approved by the inspection authority for the location.

Types of trucks covered by the code include high-lift, low-lift, fork, platform high-lift, platform low-lift, straddle, crane, powered hand trucks, other special trucks, and tractors.

Fork lift truck. This is the most widely used power truck. It is a cantilever type, self-loading truck with vertical uprights and elevating mechanism. Fork trucks permit handling of loads on shallow double-faced pallets as well as skids. Pallets afford a wider load distribution, an advantage in tiering.

Attachments are used for handling a variety of packaged and bulk materials. Clamps permit moving cartons, bales, and drums without pallets.

Dumping attachments are used for discharging liquid, solid, and granular materials.

Canopy guards are required by the code for fork trucks where the operator is exposed to danger from falling objects. The guard should be strong enough to support a capacity load and have no opening larger than the smallest package carried.

Scoop trucks shovel loose materials and elevate and dump them into hoppers and bins.

Powered hand truck. The truck is powered by a storage battery and controlled by a walking operator. A motor on the forward wheels supplies power for hauling.

A powered hand truck should have a dead-man control so brakes will be applied instantly when the operator releases the handle.

Low-lift platform truck. Platform elevates just enough for horizontal movement. It picks up loaded skids, moves them and sets them down without manual handling or use of other equipment.

High-lift truck. This may be a

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fork, platform or special type. It has a lifting mechanism to permit the tiering of one load on top of another load.

Ram trucks. This type has vertical uprights and elevating mechanism like a fork truck. It is normally equipped with a single ram for picking up coils or rolls.

Roll-handling trucks for handling paper are equipped with a cable drum and two cables. Hooks on the cables hook over the ends of a rod which serves as an axle for the roll.

Crane trucks are equipped with boom, cable, and drum. Hooks, spreaders, and slings are used for moving heavy unit loads and objects too large to be handled on truck platforms or forks.

Tractors and trailers are used where large quantities of materials are moved relatively long distances, as at freight terminals and piers. Loading and unloading is done manually or by crane or other equipment.

Unit Loading

Assembly of loads on skids, pallets or trailers to be moved from one part of the plant to another means less handling and more pieces per each handling. To move the load, it is only necessary for the truck to slide the platform or fork under the skid or pallet or to hook a tractor to the trailer.

A skid is a platform elevated from the floor by legs, casters, or special attachments.

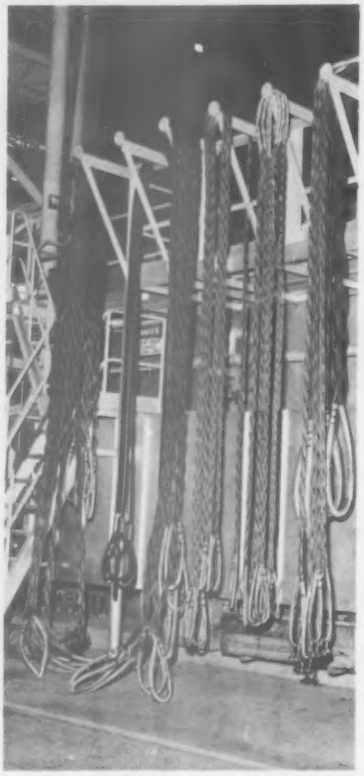
A pallet is a development of the platform skid. The most common type is the double-faced wooden pallet with sufficient clearance between top and bottom to insert the forks of a fork truck for moving.

Clamps of various types add to the usefulness of fork trucks. These can move and pile drums, bales, and cartons without use of pallets.

Steel strapping provides a secure method of fastening bundled materials and for reinforcing packing cases. Workers need training in application and removal, and should wear goggles and leather palm gloves for the work. Equipment available from suppliers should be used for applying and removing strapping.

Lift That Load

Chains and slings are real workhorses



Neatness is built into this plant. Typical of housekeeping planning is the way these slings have been hung up and stored.

THE COMBINATION of strength, flexibility and resistance to heat, impact and corrosion afforded by chains has made them the workhorses of industry.

Their versatility allows uses in hand hoists as well as huge cranes that can pick up heavy machinery.

For almost every hoisting and hauling effort, there's a chain, and attachments suitable for many projects can be obtained, or complete slings may be purchased.

Specifications for various types of chain have been compiled by the American Society for Testing Materials.

Types of Chain

Conditions under which chain will operate should be considered during selection. When ordering, the manufacturer should be consulted about applications.

Factors to be considered are: impact loading, bumpy craneways, rapid lifts, sudden stops, heat, and corrosive atmospheres.

Types commonly used in industrial operations are:

Wrought iron chain (crane or dredge) has high resistance to shock fatigue and corrosion. This chain has close links and is used for slings, hoists, cranes, power shovels, and marine purposes where human life and property depend on it.

Welded steel chain (low carbon) is made in three common types: Proof Coil, BBB, and Steel Loading.

Proof Coil is used principally for towing, binding, logging, and similar operations. Links are comparatively long. Proof coil chain is not suitable for lifting or for slings.

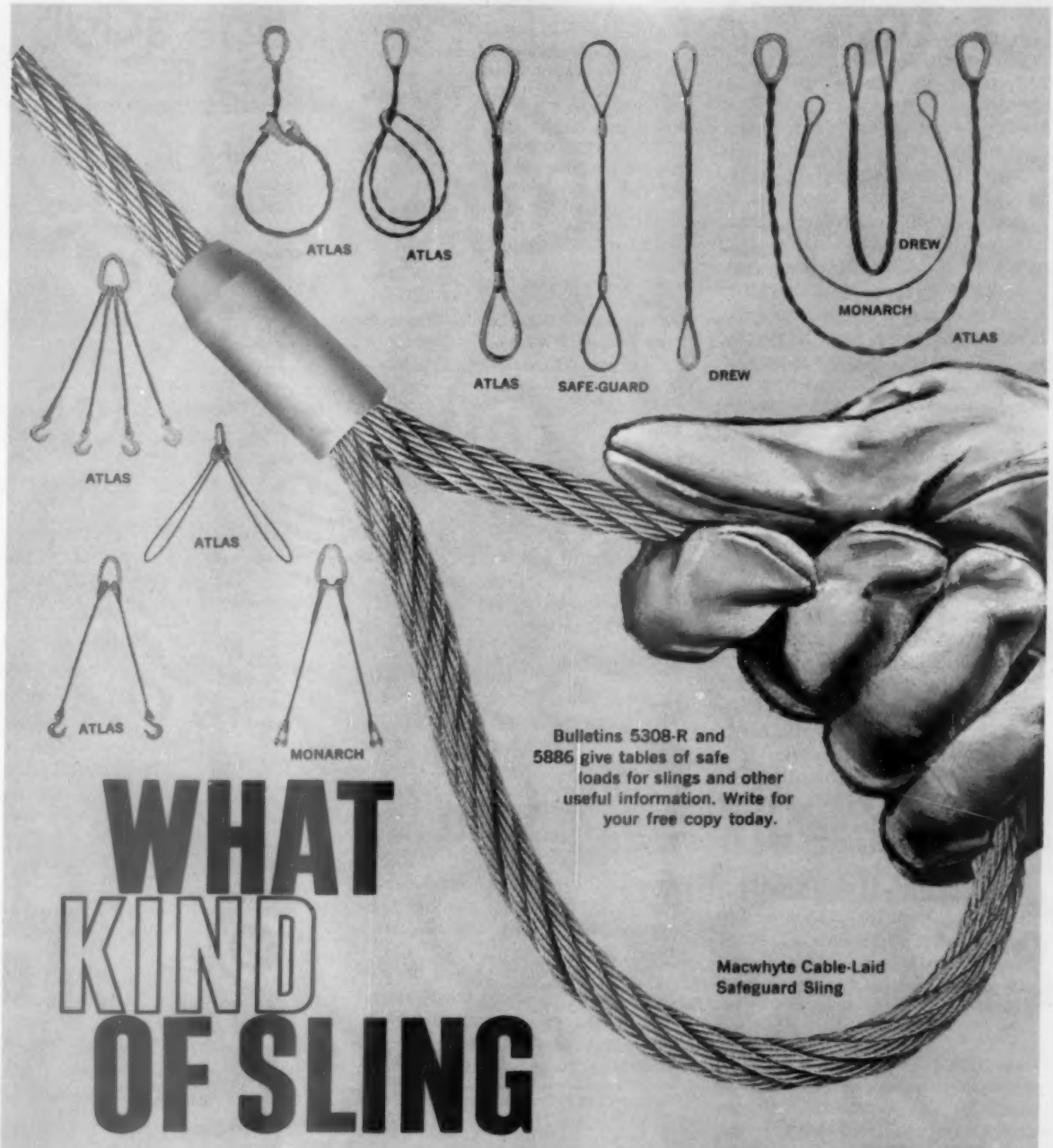
BBB Coil is a higher grade than proof coil, with safe working load about 25 percent greater. Shorter links give greater flexibility. BBB coil chain is not suitable for lifting or for slings.

Steel Loading chain has a tensile strength about 50 per cent higher than BBB. It is used in the logging industry for binding and loading

Exhaust Purifiers for Power Trucks

Where trucks powered by internal combustion engines are operated in confined spaces, carbon monoxide is a problem. Use of catalytic exhaust on trucks permits operation indoors where there is good ventilation. Types of exhaust purifiers are available for white (unleaded) gasoline, liquefied petroleum gas, leaded gas, and diesel fuel.

Preventive maintenance of trucks keeps down carbon monoxide in the exhaust. Included should be a frequent check of the carburetor, since too rich a mixture can produce excessive quantities of the gas.



Bulletins 5308-R and 5886 give tables of safe loads for slings and other useful information. Write for your free copy today.

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Whatever it is, Macwhyte makes it. The right Macwhyte is among hundreds of sizes and types designed for lightness, flexibility, and easy handling. Standard body styles include Atlas round-braided, Drew flat-braided, and Safe-Guard cable-laid. Special slings will be designed for your unusual load-handling conditions.

You can rely on Macwhyte distributors to give you the best wire rope and slings.

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THE RIGHT MACWHYTE WIRE ROPE

MACWHYTE WIRE ROPE COMPANY

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Wire Rope Manufacturing Specialists Since 1896

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CIRCLE 147 ON READER CARD

logs and in oil fields for handling pipe and heavy equipment.

High-test chain (high carbon) is heat-treated to give it high tensile strength and resistance to impact loads. Tensile strength is almost double that of ordinary steel chain. Ductility is moderate. Where resistance to wear is most important, it permits use of smaller and lighter chain.

Alloy steel chain (general purpose) has exceptional strength for weight and size, is resistant to some types of corrosion, and frequently is used where maximum tensile strength and resistance to abrasion —with reasonable resistance to impact—is required.

Special purpose alloy chain is considerably higher in cost and is used on high-temperature operations and where resistance to corrosive substances is required.

Stainless steel is high in tensile strength, fair in elongation, but low in impact resistance. It is used chiefly for ornamental installations and acid pickling.

Monel has fair tensile and impact strength and elongation. It is resistant to sulfuric and hydrochloric acid solutions but not to nitric.

Bronze has good elongation and fair resistance to impact, but low tensile strength. It is resistant to sulfuric and hydrochloric acid solutions but not to nitric.

Specialized types of chain have been developed for certain industries. Finishes sometimes are added to chains to provide added protection from corrosion or for decorative effect.

Nickel alloy steel hoisting chain is nearly twice as strong as iron chain of the same size. It meets ASTM elongation requirements for iron crane and proof coil chain. It can be used over a wider range of temperature and is relatively immune to failure resulting from fatigue stresses and cold working of the metal.

Impact resistance in heat-treated alloy steel chains does not increase in proportion to the strength of the chain. Under full working load they will fail under impact before a fully loaded wrought iron or heat-treated carbon chain will fail.

Because of wear and impact factors some manufacturers recommend that link size of nickel alloy sling chains should not be greatly reduced when using as compared with wrought iron chain.

Use and Care

Storage. When not in use, each chain should be hung on a rack or piled neatly on a dry floor or platform where it will not create a tripping hazard. Exposure to corrosive fumes or liquids should be avoided.

Safe loads. Some plants stamp on a metal tag attached to each chain the safe vertical load which may be lifted with the chain. A better way is to paint or etch the safe load, or a reference number, on the ring or hook.

Stamp marks should not be placed on links where they might form points of weakness.

The useful life of all material-handling equipment, particularly rope and chain, is shortened by overloading, jerking, and neglect.

Chain Slings

Preferably, slings should be purchased complete from the manufacturer. All attachments should be made to proper dimensions and of material specified for various uses.

References—Chain

National Safety Council

Accident Prevention Manual for Industrial Operations; 4th ed.

Alloy Steel Chains for Overhead Lifting; Data Sheet 478.

National Safety News

Chains That Won't Let You Down; Jess Hogans, Jan. 1953.

Watch Those Chains; July 1953.

No Mystery About Chain Failures; N. J. Gebert, Nov. 1953.

Inspect Those Chains; H. F. Reid Jr., May 1954.

How Safe Is That Chain Hoist? E. S. Moorhead, Feb. 1956.

Eye Bolts for Angle Load Safety; M. F. Biancardi, July 1956.



"No, no, Chester. A chain lift, a hoist."

Rope a Job

Synthetic or natural fibers

FIBER ROPE has advantages of flexibility, easy tying, splicing and manual handling, and is essential for use with block and tackle, slings, suspended scaffolds, and in marine operations.

The choice of natural or synthetic fibers will depend on the load to be handled, life expectancy and climate.

Natural Fibers

Manila is the best natural fiber for cordage, especially for large ropes. It has the highest strength and is recommended for slings. High-grade manila rope is firm but pliant. When new, it is ivory to light yellow in color and has considerable luster. When drawn through the hand, it has a smooth feel.

Sisal is an inferior fiber, used chiefly for smaller ropes. Its strength is 65 to 80 per cent of manila. Fibers are stiff and tend to splinter.

Synthetic Fibers

Nylon has about 1½ times the breaking strength of manila rope and about 4 times its elasticity. It is particularly suitable for shock loading as required by safety lines.

When wet or frozen, loss of strength is relatively small. Resistance to abrasion is higher than that of hard fiber ropes. It is also highly resistant to mildew, rotting, and attack by marine borers.

Atmospheric exposure causes little loss of strength over a considerable period. Wet nylon rope runs through blocks as easily as when dry, since there is no swelling. Splices can be made readily and develop nearly the full strength of rope.

Nylon is resistant to petroleum oils and most common solvents and chemicals. It is affected by drying oils (such as linseed) and by mineral acids, such as sulfuric and muriatic. Manila rope begins to char at 300 F; nylon melts at 482 F but hardens when the flame is withdrawn.

Dacron is approximately 90 per cent as strong as nylon but has much less stretch. It is not weak-

ened by rot, mildew, or sea water. It retains full strength when wet and shows little deterioration from long exposure to sunlight. It has good resistance to alkalis and acids and to abrasion.

Orlon has less working elasticity than nylon but more than manila. It has good resistance to abrasion and flexing under dry conditions, high resistance to mineral acids, common solvents and rot, fair-to-good resistance to alkalis. Of all synthetics it has the best resistance to deterioration from sunlight.

Polyethylene is up to 75 per cent stronger than manila. It is unaffected by rot, mildew, and fungus growth and is highly resistant to most acids (except nitric) and alkalis, as well as to alcohol-type solvents and bleaching solutions. It is swelled and softened by hydrocarbons, particularly at temperatures above 150 F.

Polyethylene is moderately resistant to abrasion and high temperatures. It is excellent for use near high-voltage electric lines. It floats.

Glass fiber is noncombustible, resilient, flexible, and durable. It has high strength when dry but not when wet. It is fairly resistant to mildew and rot and is recommended where resistance to acids and high temperatures and dielectric properties are important. It is not resistant to severe flexing and abrasion.

Care of Rope

Fiber rope should never be exposed to high temperatures, acid splashes, or fumes. Sharp bends should be avoided. Where a sling passes over sharp edges, pads should be used to protect the rope.

Rope should not be kept in stock for long periods. Even with careful handling and favorable storage conditions, vegetable fibers deteriorate with age. When rope is used at infrequent intervals, its age should be considered in its use and retirement.

New rope, before being placed in service, should be thoroughly inspected throughout its length. It should be uncoiled by laying the coil on the floor with inside end down; then reach down through the center of the coil and pull this end up, unwinding the coil counter-clockwise. If the rope uncoils in the wrong direction, the coil should be turned over and the end pulled out on the other side.

Rope loaded over 75 per cent of its breaking strength will be permanently damaged. Damage can be detected by examination of inside threads, which will be broken in proportion to the overload.

Kinking is highly destructive. It may cause failure when the rope is again put under strain.

Sometimes ropes become kinked after use. One method of removing these kinks is to open the coil and recoil left-handedly. When the coil is completed, the free end is brought through the coil and the rope is then coiled right-handedly.

Uncoiling the rope and stretching it out in a single length is another method of unkinking where space permits.

Rope should be stored in a dry

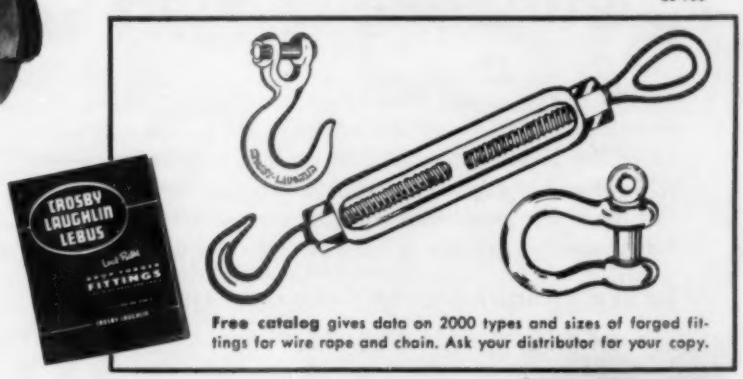


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Free catalog gives data on 2000 types and sizes of forged fittings for wire rope and chain. Ask your distributor for your copy.

CROSBY LAUGHLIN

Division of AMERICAN HOIST

FT. WAYNE, INDIANA

CIRCLE 148 ON READER CARD

References—Fiber Rope

National Safety Council
Accident Prevention Manual for Industrial Operations; 4th ed.
Manila Rope Slings; Data Sheet 259.
Sisal Rope; Data Sheet 261.

National Safety News
Facts About Fiber Rope; June 1955.
Fiber Rope Ties in with Safety; June 1959.
No Rope Tricks; Jan. 1960.

Books
Handbook of Rigging; W. E. Rossnagel, McGraw-Hill, 2nd ed., 1957.

place where it will not be exposed to high temperature and where air may circulate through the coils.

Rope deteriorates quickly if saturated with water and not properly dried. Alternate wetting and drying will also cause rapid deterioration.

When lengths of rope must be joined they should be spliced, not knotted. A well-made long splice will retain up to 90 per cent of the strength of the rope; a knot, only 50 per cent.

Inspection should include examination of the entire rope for wear, abrasion, broken or cut fibers, displacement of yarns or strands, discoloration, or rotting.

To inspect inner fibers, the rope should be untwisted in several places to make sure they are bright, clear, and unspotted.

Rope should be replaced when it has lost its feel of pliability or stretch, or when the fibers have lost their luster and have become dry and brittle.

As with wire ropes and chain slings, safe working load indicates the maximum load which should be applied to a chain in direct tension; breaking loads are frequently misleading and may result in unsafe practices; and proof-test means the test in pounds applied to the chain and attachment before leaving the factory. Keep in mind that proof-test figures shouldn't be considered safe working loads.

NEWS INDEX READY

The index to the NATIONAL SAFETY NEWS for July-December, 1960 (Vol. 82) is now available. Address requests to: The Library, National Safety Council, 425 N. Michigan Ave., Chicago, 11.



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WIRE ROPE SLING
handles 30,000-lb lift with ease

This 1-ft-thick granite slab, measuring 14 ft x 13 ft, and weighing about 30,000 lb, is typical of the heavy lifting jobs at Harris Granite Quarries, Salisbury, N. C. The wire rope sling supplying the muscle is a Bethlehem No. 167. It is a 6-part flat-body braided sling, with served loops.

Bethlehem slings are well made, with plenty of strength and flexibility, and good load-hugging characteristics. We make them in a range of styles and sizes to meet just about every lifting problem. If you would like full details, get in touch with the nearest Bethlehem sales office.

Steel *for Strength . . . Economy . . . Versatility*

BETHLEHEM STEEL COMPANY, Bethlehem, Pa.
Export Sales: Bethlehem Steel Export Corporation

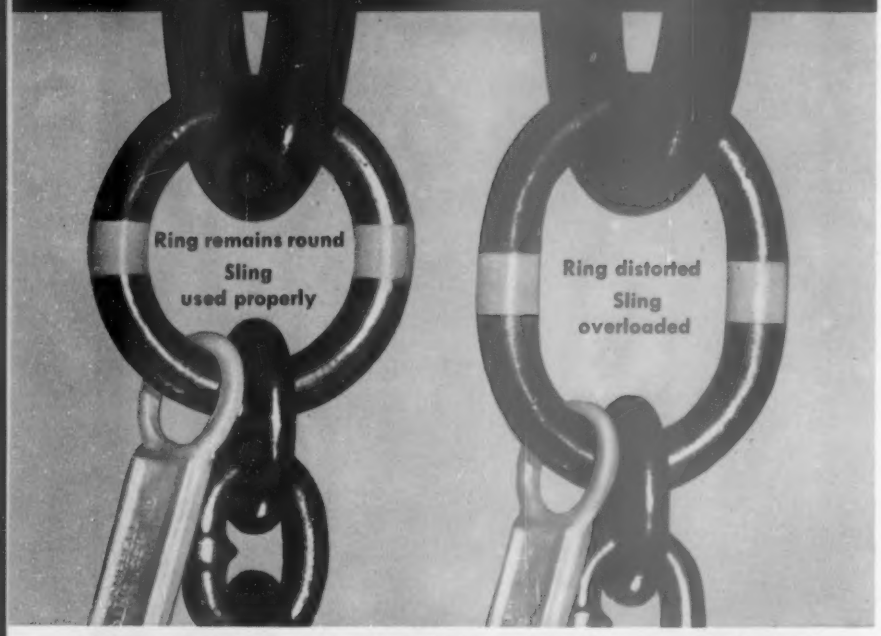
There's a distributor of Bethlehem Rope near you, supplied by our nationwide network of wire rope mill depots.

BETHLEHEM STEEL

BETHLEHEM STEEL

CIRCLE 150 ON READER CARD

The SLING CHAIN that Talks ...with the WARNING RING!



CAMPBELL SENTRY SLINGS

The **WARNING RING**† which is actually stronger than the chain itself, acts as a joiner link on Campbell **SENTRY SLINGS**. It tells you immediately when the sling has been overloaded . . . it elongates visibly . . . and before the chain itself is damaged. *Your eye can see the difference!*

New, revolutionary . . . Campbell **SENTRY SLINGS**—fully tested for over a year by foundries, steel fabricators and heavy equipment manufacturers, offer many important advantages. The **WARNING RING** changes shape as the sling is overloaded . . . *before permanent damage occurs*. Repair is quick and easy, with a new **WARNING RING** replaced at the factory. Re-tested and re-certified Sentry Slings are again ready for regular service.

Here's How You Benefit From New SENTRY SLINGS:

- Safety programs are easier to maintain — with the **WARNING RING'S** built-in safety that protects men and material!
- Lower repair costs mean greater savings for you—normally only the **WARNING RING** will need repair!
- Immediate visual evidence of overload means easier inspection—even while sling is in use!

SENTRY SLINGS, available in all types, are made from Cam-Alloy steel chain only . . . *available at no extra cost!* All carry the Campbell Guarantee and Certificate of Test.

For complete information contact your Campbell distributor or write direct.

CAMPBELL with the WARNING RING SENTRY SLING

†Pat. No. 2966878

CAMPBELL CHAIN *Company*

FACTORIES: York, Pa.; West Burlington, Iowa; Union City, Calif. ● WAREHOUSES: Medford, Mass.; Atlanta, Ga.; Dallas, Texas; Chicago, Ill.; Portland, Ore.; Seattle, Wash.; Los Angeles, Calif.

Respect Conveyors

CONVEYOR SYSTEMS, though eliminating many manual handling operations which presented opportunity for injury, must themselves be treated with respect due all machinery.

Used extensively in industry for moving parts from one machine operation to the next, moving parts through painting, drying, baking, heat-treating and other processes, from one floor to another, and even for long-distance transportation of raw materials, conveyors have played a major mass production role.

Conveyors are divided into seven basic types:

1. Roller
2. Belt
3. Chain
4. Cable
5. Monorail
6. Screw
7. Pneumatic

Most operations need power-driven conveyors but gravity conveyors of the chute and roller types can be used effectively where successive operations are conducted on lower floors.

Stile-type crossover bridges with handrails should be placed where needed along the conveyor line.

Overhead conveyors should have side boards along edges and at turns, also screen guards under high runs, to protect workers and equipment from falling material.

Portable conveyors, mounted on wheels or casters, can be moved where needed for short jobs. They are made in roller, belt and bucket types for handling packages and loose materials. They are used in warehouses, docks, shipping platforms, coal yards and sand and gravel pits.

Both power-driven and gravity types are available. The connecting cord should be a 4-conductor in case of 3-phase power, the fourth wire being grounded in all plugs and receptacles. The cable should be arranged so it cannot be run over by vehicles and it should be inspected frequently.

Where electrical power is used, the frame of the conveyor should be grounded.

←CIRCLE 151 ON READER CARD

Pick Handling Method

AT LEAST THREE primary factors decide methods of handling materials and equipment needed.

1. Does material move in more or less continuous flow and in fixed paths? Operation will then require such equipment as conveyors, traveling cranes, railroads, and elevators.

2. Are goods moved intermittently between many points in plant and yard? This is the more common situation in industry, and many types of portable handling equipment permit flexibility in handling operations.

3. The primary factor is economic — whether the capital investment in power equipment is justified in terms of time and labor costs saved. This decision is usually based on an engineering study and analysis. Safety advantages should be considerations.

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National Safety Council

Accident Prevention Manual for Industrial Operations; 4th ed.

Manual Handling of Pulpwood & Logs; Data Sheet 292.

Dock Plates and Gang Planks; Data Sheet 318.

Steel Strapping; Data Sheet 315.

Skids; Data Sheet 260.

Lumber Handling and Piling; Data Sheet 345.

Lining Tanks and Vessels with Rubber; Data Sheet 492.

Liquified Petroleum Gases for Industrial Trucks; Data Sheet 479.

An Engineering Approach to Material Handling Safety; Walter J. Bryne, 1958 Cong. Trans. Vol. 16.

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Standardization's Neglected Field; Nathaniel Warshaw, June 1954.

Automatic Units in an Automatic Factory; F. R. Swanson, May 1955.

How About Hoists? B. J. Povolny, Jan. 1957.

Planning for Safer Materials Handling; Richard J. Sweeney, Nov. 1956.

Hoist Inspection Simplified; Dec. 1957.

Rx for Safe Materials Handling; Feb. 1958.

Get Set for Bigger Loads; Myron L. Miller, Apr. 1960.

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Handbook of Rigging; W. E. Rossnagel, McGraw-Hill, 2nd ed. 1957.

Material Handling, Principles, Equipment and Methods; Harry E. Stocker, Prentice-Hall, 1951.

Materials Handling Handbook; sponsored by American Society of Mechanical Engineers and American Material Handling Society, Ronald Press, 1957.

Materials Handling Manual, 2 vol., Boston Publishing Co., 1955-1957.



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Long Haul

TM alloy slings

"Stamina for the long haul!" That's the frequent comment on the performance of TM Alloy Sling Chains in steel mills, foundries, forge shops, mines and countless other industries.

Bulletin 14A—packed with facts and specifications—gives you many reasons why TM Alloy Chain is valued by so many. Call your industrial distributor, steel warehouse, hardware wholesaler, or write today for your copy.

Taylor Made CHAIN SINCE 1873

Prompt repairs on alloy slings in both plants.

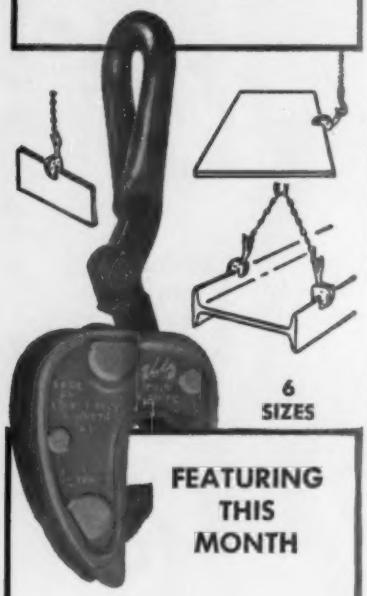
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YOUR BEST MOVE . . . MOVE with MERRILL MATERIAL HANDLING DEVICES FOR THE MOST IN Safety and Economy

Imitated, but never duplicated, Merrill Lifting Clamps are Drop Forged to give you Safety in Handling and Economy in Operation.



6 SIZES

FEATURING THIS MONTH



HORIZONTAL PLATE CLAMP
Rated capacity — 3 ton (6 tons per pair). Completely drop forged . . . Heat treated.

Over 25 Material Handling Devices described in our catalog C-3.

Ask for a copy.

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Producers of Drop & Press Forgings
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Wire Rope Is Workhorse

If you maintain it carefully

IN SPITE of wire rope's relatively high tensile strength, moderate flexibility, and resistance to wear and weather conditions, careful maintenance is necessary to procure long, safe service.

Because it is available in a variety of grades, constructions and sizes, a study of individual needs should be made to determine the type of wire rope and sling best suited for a particular job.

Wire rope needs careful handling and maintenance for long, safe service. It should not be exposed to excessive heat or corrosive substances nor dragged over rough surfaces.

In selecting wire rope, consider these factors:

1. Size.
2. Construction.
3. Grade.
4. Equipment on which rope is to be used, conditions of service.
5. Handling, installation, and maintenance.

Every user of wire rope should have a file of catalogs and handbooks of the leading manufacturers. In addition to listing types available, these give much useful information on use and maintenance.

Constructions

There are many types of construction, each with its own particular advantages for certain service conditions.

In describing construction, the first numeral indicates the number of strands in the rope; the second, the number of wires in each strand.

This is followed by a term describing the geometric arrangements of wires in each strand, such as 6 x 19 Filler Wire.

The 6 x 19 construction is the most generally useful. As the number of wires per strand increases, flexibility and reserve strength increase, but ability to withstand abrasion decreases. A 6 x 7 construction has higher resistance to abrasion but less flexibility.

The core serves as a foundation for the strands. Three types of cores are used: fiber; independent wire rope; and wire strand.

Fiber gives elasticity to the rope and has adequate strength for normal operating conditions.

Metal cores are used where maximum strength and minimum stretch are important; where heavy loads or overwinding on a drum causes excessive pressure of strands against the core, or where temperature would dry out a fiber core.

Type of lay. There are two general methods of laying up rope:

1. Regular lay. Wires in the strand are laid in the opposite direction to that of the strands in the rope, so that on the outside of the rope the wires lie approximately parallel to the rope axis. Regular lay is standard. It is easier to handle during installation and is less susceptible to kinking.

Lang lay. Wires and strands are laid to the same direction. It has flexibility and fatigue resistance.

Herringbone is fabricated of 2 pairs of Lang lay strands separated by 2 strands of regular lay. This new construction is said to combine the flexibility and abrasion-resistant characteristics of Lang lay rope with the structural stability of regular lay. At present herringbone ropes are of the 6 x 37 construction and are preformed.

Wire rope is made either right or left lay. In most cases it makes little or no difference which type is used. Right lay is standard.

Rope Grades

Rope wires usually are made of the following materials and designated by their names (Minimum tensile strengths are quoted from Federal Specifications RR-571a):

Improved plow steel. Has highest strength and toughness and most wear-resistant properties. Most frequently selected for heavy-duty service, as in deep shafts and on excavating machinery. Minimum tensile strengths, 218,000-244,000 psi.

Plow steel. Strength about 15 per cent less than improved plow steel. Serviceable for haulage, hoisting,

logging, and miscellaneous service. Minimum tensile strengths, 190,000-212,000 psi.

Mild plow steel. Combines toughness with pliability, making it capable of undergoing repeated impact stresses. Used principally for cable tool drilling. Minimum tensile strengths, 165,000-184,000 psi.

Cast steel. Where strength is not the controlling factor, its pliability is important to long life. Resistant to acid mine water.

Traction steel. Used in hoisting ropes for traction-type elevators. High resistance to bending fatigue and minimum abrasive action on sheaves and drum. Minimum tensile strengths, 165,000-184,000 psi.

Iron. Low tensile strength (about 70,000 psi.) but ductile. It has been used principally in elevator service where it is being replaced by traction steel.

Corrosion-resisting metals. Where corrosion is a factor, stainless steel, bronze, and monel metal are used frequently. All-metal ropes are preferred to fiber-core ropes.

Stainless steel is used in marine operations, on aircraft, and where rope is exposed to alkali, acids of an oxidizing nature, (such as nitric), neutral brine, food products, and temperatures damaging to carbon steel ropes.

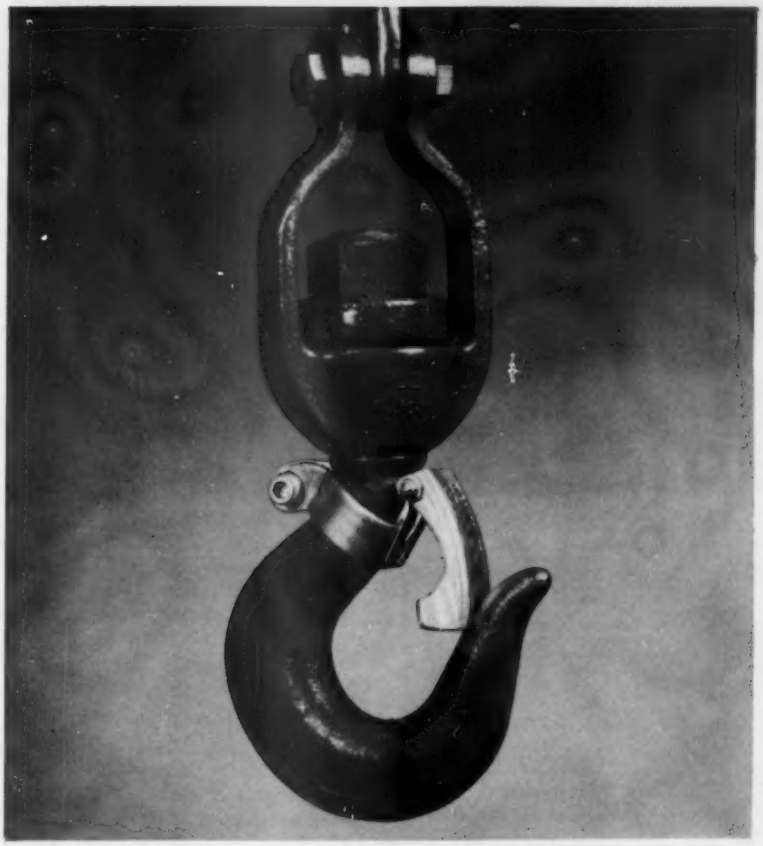
Bronze is slightly stronger than iron rope. It is used frequently in marine service.

Monel metal is used where rope is exposed to marine atmospheres, acids of a reducing nature (such as sulfuric, muriatic and hydrofluoric), neutral brines, food products, pickling solutions, and aromatic chemicals.

These ropes are furnished in complete assemblies and slings with fittings attached. Temperature, humidity, nature and concentration of corroding chemicals should be considered in selecting equipment.

Preformed Ropes

A preformed wire rope is one in which each individual strand, and at the same time each individual wire, is permanently formed into the helical shape it will assume in the finished rope. Advantages of preformed rope are:



Thirteen stock sizes fit hook necks ranging from ⅞ through 3¼ in. Latches for larger necks available.

New Peerless
SAFETY LATCH
converts standard hooks to safety hooks in minutes

Make all hooks on your hoisting equipment safety hooks . . . convert them in minutes with simple tools and a Peerless Safety Latch. Made of sturdy corrosion-resistant materials and designed for long life.

The latch installed costs less than machining a conventional safety hook, can be applied to any make of hook on any type of hoist or sling, has finger lugs to protect hoist operator.

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Hand Chain Hoists (1/4 to 60 tons) • Electric Hoists (170 to 4000 lb.)
Trolley Hoists (1/4 to 12 tons) • I-Beam Trolleys (1/4 to 20 tons)

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MORSE
Model 80 *Barrel-Lift*

Now . . . one man can safely handle liquid drum loads from 500 to 1,000 lbs.—raise, rotate, transport, tilt and drain 55 gal. drums. The mess, expense and hazards of spills, leaks, overflow and drum damage are eliminated. Sturdy, all steel welded construction . . . rubber tired wheels with ball bearings and rubber tired rear caster.



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Provides **complete** control. Easy one-man operation. Attaches to any monorail hoist . . . for all double chine drums 23" in diameter, 36" in height. Positive tilt locks hold drum in vertical position for carrying . . . provide control of tilt for mixing or dispensing. All steel welded construction.



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MANUFACTURING CO., INC.
765 West Manlius Street, East Syracuse, N. Y.

1. Higher resistance to bending fatigue.
2. Greater flexibility.
3. Less susceptible to kinking and therefore easier to install.
4. More equal distribution of load on each strand and wire.
5. More resistant to whipping and vibration.
6. Hugs small drums better and winds more uniformly and smoothly.
7. Operates over sheaves with less rotation around its axis, with less wear on rope and sheaves.
8. May be socketed with less danger of unbalancing the lay of the rope below the base of the socket.
9. Does not unravel when seizings are removed from ends of rope.
10. When outer wires break through fatigue, they do not protrude or "porcupine." This reduces risk of injury in handling.

Since broken wires are less conspicuous in preformed rope, greater care is needed in inspection. However, broken ends separate slightly, permitting detection.

Strength and other qualities are the same for preformed and non-preformed rope of the same size, grade and construction.

Slings and Fittings

Wire rope slings are widely used for heavy loads. Types of slings are grommet, single leg, 2-leg bridle, 3-leg bridle, 4-leg bridle.

Legs can be single-rope, double rope, grommet, braided single, or braided double.

Load-end fittings can be loops, links, hooks, chokers, sockets, shackles, equalizing thimbles, slip-through thimbles, plate clamps, or special.

Complete assemblies can be obtained from manufacturers who should be consulted when slings are to be used for special purposes.

Maximum strength is obtained when all legs of the sling are vertical. The smaller the angle formed between the legs of the sling and the horizontal, the greater the tension on the legs and the less weight which can be lifted.

When a load has sharp corners, pads or sling saddles should be placed between load and sling.

Load-Bearing Parts

Wire rope, chain, and fiber rope are important wherever loads are lifted or hauled. These products are built to meet exacting specifications, and their capacities are listed according to size, material and type of construction.

Slings made of these materials and attachments, such as hooks and rings, are designed to meet the needs of every hoisting job.

These parts are subjected regularly to heavy loads, sometimes overloads. They should be selected for the needs of the job and kept serviceable by regular inspection and maintenance.

Safest
featuring new 360° Swivel



J & J
Safety Lift Hooks

Prices f.o.b. Mentor
3-ton, $39 9-ton, $62
6-ton, $46 15-ton, $92

★ Safety Approved by Auto Manufacturers
★ Fail-Proof, 100% tested above rated capacities
★ Maneuverable, free turning swivel
★ Permanent Assembly, always intact, no low-strength substitutes

Safety engineers' first choice for most efficient handling of "heavies," 3 to 15-ton dies, etc. No J & J has *ever* failed. Hook swivels without loosening bolt. Permanent assembly: forged hook, swivel bushing, chrome-vanadium bolt with self-cleaning threads (hex-head has knurled ring). Send in your old J & J's for conversion to new swivel: 3-ton, $24; 6-ton, $29; 9-ton, $39; 15-ton, $59. All prices f.o.b. Mentor. Ask for latest bulletin.

MENTOR PRODUCTS, Inc.
Box 70 Mentor, Ohio

CIRCLE 156 ON READER CARD

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SECTION 8

MACHINE OPERATION AND GUARDING

IN SECTION 8:

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New Processes Pose New Guarding Problems

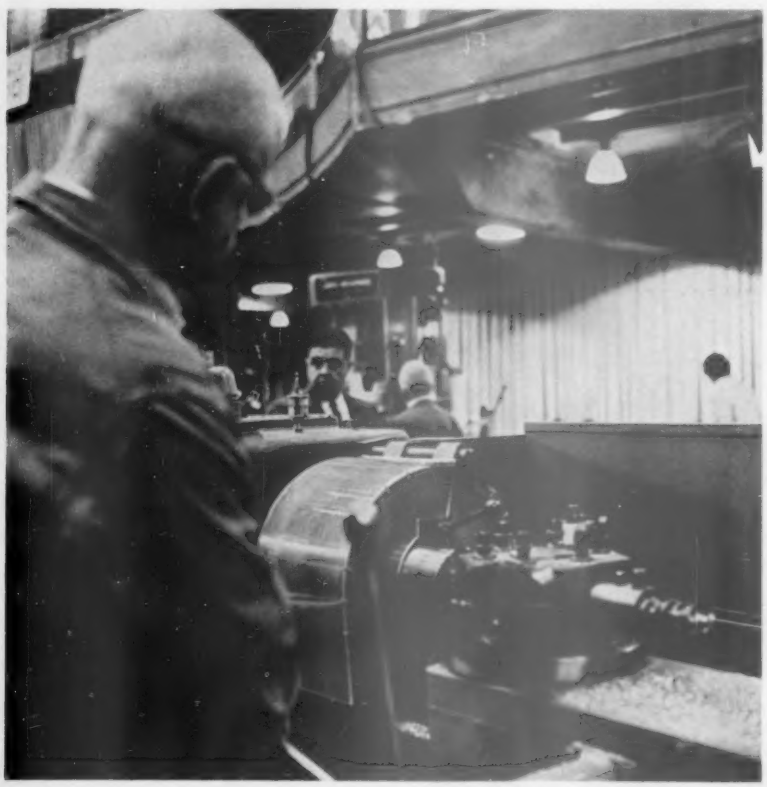
By E. CLARK WOODWARD



E. Clark Woodward is director of safety at A. O. Smith Corporation. He has been in industrial safety work since 1932 with Hotpoint, Jefferson Electric, Illinois Institute of Technology, and the Greater Chicago Safety Council. He has been general chairman of the Power Press and Forging Section and the Automotive and Machine Shop Section and vice chairman of the Electrical Equipment Section. Mr. Woodward is a member of the Technical Publications Committee of the Industrial Conference and is on the NSC Board of Directors. He has headed the Milwaukee chapter of ASSE, the West Allis Industrial Safety Council, the Wisconsin Council of Safety, the Wisconsin Governor's Committee on Highway Safety, and the Milwaukee Association of Commerce Foremen's Safety School. In addition, Mr. Woodward is the author of numerous safety articles and booklets.

IN LISTING the Three E's of Safety, it is customary to place "Engineering" in first position as an indication of its primary importance in accident prevention. Effective safety engineering, through equipment design, arrangement, and guarding, has been and will continue to be the first line of defense against accidental injuries in the operation of machines.

Much has been accomplished in the last 20 years to improve safety of machine operations. Manufacturers have done a great deal to eliminate hazards through better design of machine tools. Engineering colleges are placing more emphasis on safety in their curricula. Design engineers in industry incorporate safety considerations in their plans to a greater degree than ever before.



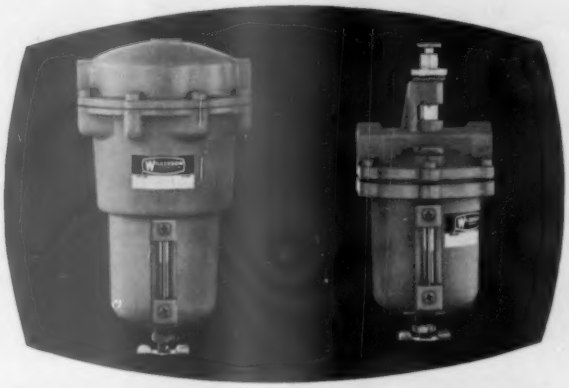
The National Safety Council produces Data Sheets covering a wide range of safety engineering subjects. Its fine publication, *The Accident Prevention Manual for Industrial Operations,* is an indispensable reference. The many safety standards of the American Standards Association provide additional sources of information. Today, the safety engineer has a wealth of such data available to him.

Industrial operations become more complex as we progress in automation and as new processes and products are developed. In many instances, special machinery calls for the creation of special guarding methods not described in current literature. Increasing appearance of plastics in fabricating processes brings special problems. Radioactive materials are more and more widely used in industry and must be guarded against.

The safety engineer of today faces a never-ending challenge to keep abreast with industrial progress. More than ever, he must make his function a part of his employer's engineering planning and development work. He can do this with confidence in the undeniable fact that good safety engineering invariably contributes to improved efficiency and economy.

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Built-in guarding over the main drive looks better, is stronger, and costs less than a similar shop-built guard. Stroboscope at right is available to check safe rpm.

Can Guards Guarantee Safety?

Perhaps not, but they come close to it.

WITH INDUSTRY realizing that accident costs are as much a threat to the profit margin as production expenses, today's machinery has a good many built-in safety features. Guards are a major element in this safety effort.

Yet, operators, being human, still frequently allow themselves to lapse and become accident statistics.

Standard guards for many types of machines are on the market, or are available as optional equipment on new machinery. These and homemade guards are often installed on older machines and on newer ones where built-in guards have not been provided, or where specially made guards are needed. For presses, circular saws and other machines, many types of guards are available.

Some operations can be guarded effectively with commercial devices. Most require guards developed through study of the job by both operating and safety departments.

Machines involved frequently in accidents include woodworking machines such as circular saws, jointers and planers, power presses, and abrasive grinding wheels of all kinds.

Guard design in some states must be approved by state factory inspectors and insurance engineers. Since state codes are not uniform and at best represent only minimum requirements, recommendations of the American Standards Association or the inspection department having jurisdiction are the best guides. These should also be considered as minimum requirements.

Point of Operation

Guarding the point of operation effectively is much more difficult than enclosing power-transmission apparatus.

Point-of-operation guards are installed at those parts of machines where cutting, shaping, or forming is performed, and at other points

potentially hazardous to operators inserting or manipulating stock.

Guards should protect operators both from moving machine parts and from moving materials. Safeguards are of these types:

1. Automatic feeding and ejecting.
2. Two-hand control.
3. Redesign of machine parts so the operator cannot get into the danger zone.
4. Devices that stop machines by electronic devices while any part of the body is in the danger zone.
5. Devices that pull or push hands away from the danger zone.
6. Barricades, covers, hod guards, and other enclosures.
7. Quick-acting brakes operated by contact of the body.
8. Interlocking devices.

Hood enclosures and cover guards are used on woodworking machines and other types of equipment. Frequently, such guards are automatic or semiautomatic. Others are of rigid construction.

Nip hazards, such as rubber mills, calender rolls, and others, can be protected by sensitively adjusted controls that operate dynamic brakes when contacted by any part of the operator's body. These controls stop the machine quickly.

Frequently, a bar or shield is used to allow insertion of the work at the nip, but which disallows entry of fingers or hands.

Two-hand trip controls frequently are installed on power presses, bakery machinery, guillotine paper cutters, and other types of equipment where barrier guards are not practical. Guards should be installed wherever possible, even when two-handed controls are used.

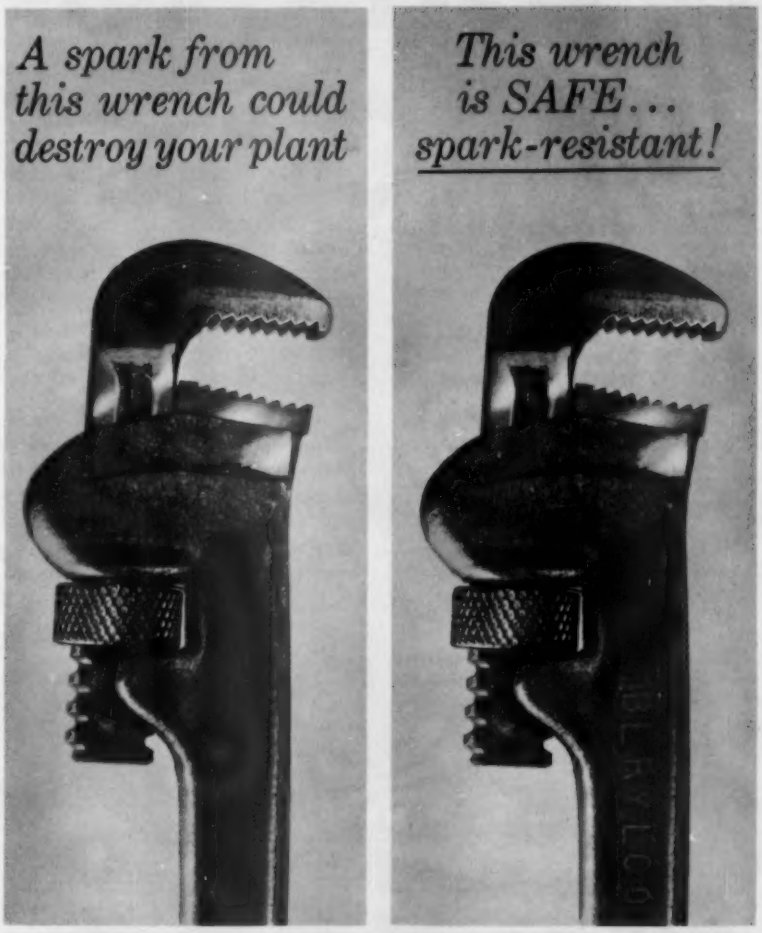
Interlocking devices prevent operation of the starting control when the cover or barricade is not in place. These are used on centrifugal extractors, dough mixers, tumblers, some types of pressure vessels, and power presses.

Color is an important safeguard. Highlighting the point of operation with light tints in contrast to the darker background of the machine reduces the effort of seeing. Guards painted in high-visibility colors are also conspicuous when missing.

Power Presses

Safeguarding power-press operations is one of industry's major

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accident-prevention problems. Because of the many types of presses and specialized operations performed, the subject is highly complicated. Material on press operation is available from the National Safety Council, American Standards Association, U.S. Department of Labor, insurance companies and consulting engineers.

Automatic feed makes it unnecessary for an operator to place his hand between punch and die. It is still necessary to provide an enclosure guard for the ram, or limit its stroke to one-fourth in. or less.

For some operations, semiautomatic feeds are used. Principal types are: chute, plunger, slide or push, sliding dies, dial, and revolving dies.

Two commercial protective devices adaptable to many operations are the sweep and pull-back types.

Sweep devices are best used on small presses. They are easily adjusted and give protection any time the press cycles, intentionally or otherwise.

A flag of fiber or other material placed on the sweep arm helps to prevent an operator from reaching around the device on one side, and on slow-moving presses from putting his hand between punch and die after the sweep arm has swept past the center of the stroke.

Sweep devices are not effective on large presses.

Pull-out devices forcibly remove the operator's hands from the point of operation, if he is out of rhythm with the machine. Cables connect the ram with wristlets on the operator's arms. As the ram descends, the hands are forcibly withdrawn. The device must be adjusted to each operator and each job because of variations in arms, hands, and fingers.

However, neither the sweep nor pull-out devices or *any* protection other than a barrier of some kind will protect the operator whose hands are in the point-of-operation zone if there is a mechanical failure, such as a broken pitman or pitman screw, broken shaft, clutch, or the die falls out of the die holder.

Die design. Enclosure guards should always be considered integral parts of the dies. Install guards of a different type for each set of dies used on punch and forming presses.

Feeding tools. Hand feeding tools are intended for pushing, placing, and removing materials in hazardous point-of-operation areas. These tools are made of soft nonferrous metal, such as aluminum or magnesium. They may be magnetic or nonmagnetic and include pushers, pickers, tongs, tweezers, forks and suction cups, but there is no limit to the shape of tools which can be de-



This worker is protected by the expanded metal guard that encloses the mechanism of a screw counting machine.

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National Safety Council

Accident Prevention Manual for Industrial Operations; 4th ed.

Power Press Safety Manual, 1958.

Inspection and Maintenance of Power Presses; Data Sheet 224.

Individual Die Guards and Adjustable Press Barriers; Data Sheet 365.

Diecasting Machines, Data Sheet 226 (Revised).

(See complete list of Data Sheets for information on guarding various types of machines.)

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Use, Care, & Protection of Abrasive Wheels, Safety Code for the; B7.1-1956.

U.S. Dept. of Labor

The Principles and Techniques of Mechanical Guarding—Bulletin No. 197; Wm. G. Griffin and Sheldon W. Homan. U. S. Dept. of Labor, Bureau of Labor Standards, 1959.



Seated safely outside of this wire mesh guard for a drive belt assembly.

veloped for odd shaped parts and specialized jobs.

These hand feeding tools are not substitutes for guards and devices, but will help prevent hands from coming in contact with cutting edges and pinch points.

Electronic control devices. The photoelectric relay consists of a beam of light. When this is broken by the operator's hands, the start of completion of the ram stroke is prevented. The relay responds instantaneously, is automatic, takes up little space, is easily installed and economical to maintain. Its disadvantages are comparatively high installation cost and limited uses.

On presses with friction clutches, the ram travel stops immediately when the light beam is broken. This method is not effective on presses with positive clutches because the ram will continue its stroke until the end of its cycle. The device should be operated from a closed electric circuit so that current interruption will automatically prevent the press from tripping.

Power Transmission

Power transmission apparatus includes shafting, belting, pulleys, gears, starting and stopping devices, and other moving parts of equipment used in the mechanical transmission of power. Also included are prime movers, intermediate equipment, and other machines.

Individual motor drives and modern designs with moving parts enclosed have eliminated much guarding on the job. However, some guards still must be added when machines are installed.

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Materials for Guards

Sheet metal, perforated metal, expanded metal, heavy wire mesh or bar stock may be used for most types of guards.

Transparent plastic is used where inspection of moving parts is necessary and the strength of metal is not needed.

This type of plastic also is used because of the ease of forming it around oddly shaped areas for which it is difficult to form any other material.

Shatterproof glass is used in similar situations, particularly where illumination of guarded parts is essential and the flexibility of plastic is not required.

Where flying particles may mar safety glass or plastic, the surface may be protected by replaceable glass covers.

Wooden guards are relatively low in strength but are sometimes used where splashes and fumes from corrosive substances would attack iron or steel.

Aluminum or other nonferrous metals may be used where resistance to rust is essential or where machinery may be damaged by iron or steel.

Supervision

The worth and effectiveness of any guarding program is based on the approval, cooperation, and continuous vigilance of the supervisory staff. Secondary to these conditions are inspection, training, and maintenance of equipment and the safety devices used with it.

Frequent checks should be made to see that instructions are observed and that safety devices are functioning.

Operators occasionally make safety devices ineffective in an attempt to speed up production or make operation easier. This is especially frequent with two-hand controls. Operators should be warned of the hazards involved and instructed in the use of safety devices.

Edison Safety Man Dies

William Leone, 52, assistant director of Consolidated Edison's safety services bureau, died February 5 in Long Island College Hospital.

Mr. Leone joined the firm in 1926 as a record tracer. He attended evening classes at the Polytechnic Institute of Brooklyn, where he received a degree in electrical engineering in 1935.

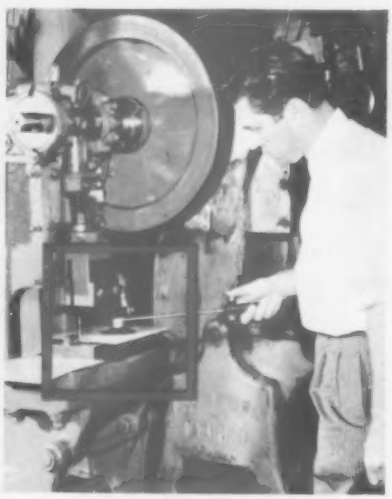
He was chosen for the management development program and was assigned to production, sales, and system engineering. In 1954 he joined the safety services bureau.

Mr. Leone was a member of both the New York State and the National Society of Professional Engineers. He was active in the Edison Electric Institute, where he was chairman of a sub-committee investigating the safety problems connected with the development of atomic power.

Keep operator's hands away from the ram . . .

PUNCH PRESS VACUUM LIFTERS





ATLANTIC INDIA'S Vacuum Lifters safe-guard the operator and speed punch press work. Sturdy neoprene vacuum cup grips and holds any smooth surface, whether dry or oily.

Vacuum is released by the flick of the thumb. Vacuum Lifters come in a variety of cup sizes and handle lengths. There's a design to fit your punch press needs . . . and other production jobs as well.

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Safety Equipment — K-C Region
Death of owner makes profitable, established industrial supply business available to aggressive businessman having $10,000 to $20,000 capital, organization talents, and industrial sales experience. One of top 500 corporations offers exclusive franchise on leading line of industrial safety equipment selling to diversified markets. Opportunity for expansion excellent. 90 years of successful distribution of these nationally advertised products:

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Don't Fear Electricity

But respect its ability to help or hurt

REGARDLESS OF its source, electricity is going to be in demand for some time to come, and it is a mixed blessing.

It can give us light, move us around, help us communicate, and provide industrial power. And in each of these capacities, electricity can maim or kill us.

To conserve life and property vigilance and maintenance procedures should be set up.

Rules and requirements for the safe installation of electrical equipment are covered by the National Electrical Code developed by the National Fire Protection Association and approved as an American Standard CL-1959. Local codes and regulations, of course, have preference but they are usually based on, or follow the national code.

All in-plant wiring and electrical installations are covered in the National Electrical Code and each new installation of any electrical equipment should be reviewed for compliance with this code. The review of planned installations of new equipment should be done before actual work is started or the materials or equipment are purchased. All phases of the installation should be checked to be sure that no part of the installation is substandard or faulty.

One faulty installation can result in a trap for some employee. It may result in an injury when equipment is first energized or may not become apparent for weeks or months. Jarring, vibration or wearing of insulation can suddenly energize the entire piece of machinery, motor or control panel and a serious employee injury occurs.

Purchase of Equipment

In planning the purchase of electrical equipment, it should be determined if the item is subject to testing by the Underwriters' Laboratories. If so, the particular brand of equipment having their approval should be selected. The Underwriters' Laboratories' specifications and requirements are very rigid and a high standard of quality must be maintained to receive this approval and to keep it, under periodic reexaminations.

Maintenance

During repair or maintenance operations on electrical equipment, exposure to injury from electric shock is much greater. In all cases of repair work on motors, controls or electrical driven, machinery, the equipment should be de-energized by opening the necessary switches and locking them in the open position.

If no provisions are available for locking the switch open, it should be blocked and a tag attached showing that the switch should not be closed by anyone except the man whose name appears on the tag.

Warning Signs and Barricades

In all cases, where there is exposed electrical equipment or main controls can be reached by plant



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LIGHT, PORTABLE, EASY TO USE

"Little Windy" Airvac has many applications a few of which are:

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Write for further data and technical information.

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personnel, warning signs as designated by the American Standard Z35.1-1959, "Specifications For Accident Prevention Signs" should be installed.

There are some cases where good, safe practices call for keeping unauthorized personnel out of a certain area. This occurs frequently in the repair or installation of electrical equipment or in testing areas of the plant. Serious consideration should be given in each case to determine the best method of keeping people out of the area. In some cases, wooden barricades, warning signs or colored tape are sufficient but in other cases, the use of interlocked gates or complete fencing off of the area is necessary.

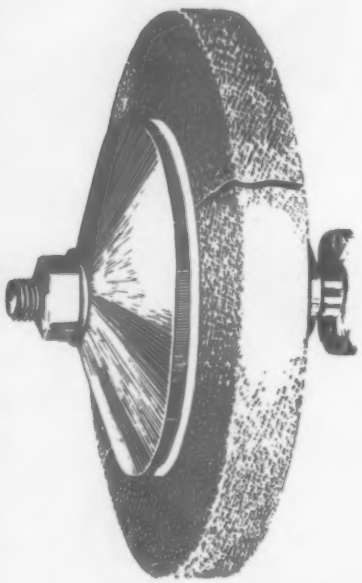


Lifted bar cuts power, stops crane cab movement during entry.

THE STORY *of the* BROKEN GRINDING WHEEL

A whirling grinding wheel can tell its own story of havoc when it explodes . . . But in this case Perks Safety Washers do the telling!

A test conducted in the Sta-Safe laboratory used the new neoprene faced Perks Safety Washers and an 8" grinding wheel cracked in two places. At 5,000 RPM —an outer surface speed of 12,500 feet per minute— Perks Safety Washers held the wheel intact!



Standard Safety does ***not*** recommend to you the use of broken grinding wheels—even with Perks—but Standard Safety does recommend Perks Safety Washers as a precaution against possible tragedy in your company. Perks Safety Washers are easily installed on any size grinding wheels. Keep your equipment and personnel safe-guarded. Write now for Bulletin No. 54 containing complete information about Perks Safety Washers.

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Cords, Sockets, Lamps

Extension cords should be of a type listed by Underwriters' Laboratories and labeled to show compliance with the National Electrical Code. They should be inspected regularly. Kinking or excessive bending of cords should be avoided.

Ordinary lamp cord should not be used where it will be exposed to mechanical wear or to moisture – never for extension lamps in boilers, tanks, or on damp or metal floors.

Cord for portable tools and equipment is made in several grades.

For heating devices, such as electric irons and water heaters, cord requires an insulating covering containing flameproofing material such as asbestos fiber. It resists high temperature and moderate dampness.

Sockets should be of porcelain, non-conducting plastic, or rubber covered. Ungrounded metal-shell sockets are not recommended.

Extension lamps with 6-12 volt transformers are sometimes used where a shock of 120 volts might be fatal. Safe cords and lamp holders must be provided and maintained in

Guarding and the Law

Safeguarding the operation of mechanical equipment and machinery has always been of major importance in industrial safety. The first state legislation regulating industrial operations was predominantly concerned with mechanical guarding — still the primary concern of such laws.

good condition. Handles should be of non-conducting material and there should be no metallic connection between lamp guard and socket shell.

Because metal frames of portable electrical equipment should be grounded, cord with a green covered ground conductor should be used with a polarized plug and receptacle. If plant circuits do not have polarized receptacles, a third wire taped to the cord may be used. One end of the third wire is connected to the frame of the tool; the other end, which should be several feet longer than the cord, is clamped to a water pipe or other effective ground with a spring clip. It should be stressed that when repair work is done on equipment with a built-in ground (green) wire, special care should be taken to be sure the wiring is done properly to avoid energizing the equipment.

Employee Training

The safety program should include thorough training of employees who install or operate electrical equipment. Such items as electric shock, results and causes, use of rubber protective equipment, insulating floor mats, and personal protective equipment should be thoroughly discussed with each person. They should be aware of the hazards of electric shock and burn injuries and the steps they can take to prevent their occurrence.

Of particular importance is a knowledge of first aid and the use of artificial respiration to restore breathing. Stoppage of normal breathing is a frequent occurrence when electric shock is encountered.

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Electric Cords and Fittings; Data Sheet 385.

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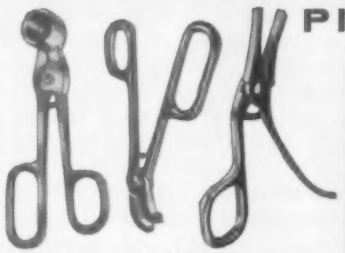
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Underwriters' Laboratories

Electrical Appliance and Utilization Equipment List.

Hazardous Location Equipment List.

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COMMON SENSE...

As one tells another, "Safety" just doesn't happen. It is developed by field trained safety engineers, competent to "see" your problem and help you eliminate costly accidents to your man power and equipment. Pliers, Tongs, Safety Lock-Outs, Silenc-air Mufflers, Stretcher Cases, Spruemasters (to remove casting) —What ever your problem is get in touch with . . . . . .

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Corrosion Resistant not affected by acid or moisture—permanent finish, CONSPICUOUS, Vertical or horizontal mounting, white or yellow, Full size 95" high—9" diam.

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Hand, Power Tools Can Hurt

But not if you select, maintain them wisely

HAND and powered tools are still depended on for completion of many jobs handled primarily by larger machinery. This is true in mass production operations and in maintenance and construction work.

Consequently, hand tools and portable power tools are responsible for many injuries, ranging from electric shock to cuts and severe bruises.

Selection. Tools for both routine and special work should be kept in stock or readily available. High-grade tools are the best buy and the difference in initial cost is offset by longer life, reduced upkeep, and lessened risk of accident.



A sheet metal guard mounted atop a disk grinder holds down flying particles.

Alloy steels combine strength with toughness with light weight which justifies the higher cost for some jobs. Alloys are used for hammers, wrenches, screwdrivers, woodworking tools, pliers, rivet sets, saws, knives, and punches.

Some alloys resist mushrooming and chipping but no tool should be subjected to unnecessarily rough use.

Nonferrous hammers or mallets should be used for striking tempered or case-hardened tools. These hammers are usually made of copper, lead, bronze, brass, rawhide, or wood.

Handles. With hammers, sledges, axes, and picks, the greatest strain is where wood and metal join. An adequate supply of good handles should be kept in the toolroom. These should be straight-grained wood, free from slivers. Hickory, ash, and maple are preferred.

Insulated tools. For working near electrical equipment, tools with insulated handles are desirable. These provide desirable protection but are not a substitute for rubber gloves and other protective devices.

Marking tools. Steel stamps and holders for stamping identification marks on machine parts and other metal surfaces are available in alloys which resist mushrooming and do not chip readily.

Tool Room

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tenance of tools. Protective equipment, such as goggles, should be recommended and issued with the tools.

Centralized control also makes it possible to keep records on tool failure and locate unsafe conditions and unsafe acts. Tools are exposed to less damage than with scattered storage.

A set of numbered checks can be issued to each employee at the time of employment. These are exchanged for tools at the supply room. By this system the attendant knows where each tool is and can call it in for inspection regularly.

When there are operations at several locations it is not always practicable to maintain a tool supply room. In such cases the foreman should inspect tools frequently and take out of service those found defective. A check list is helpful.

Carrying Tools

Tools should never be carried when both hands are needed for climbing. A strong bag, bucket, or other container should be used for hoisting or lowering tools.

Chisels, screwdrivers, and pointed tools should never be carried edge or point up in the pocket. They should be carried in a tool box or cart, in a carrying belt like those used by electricians and structural steel workers, in a pocket tool pouch or in the hand with points and cutting edges away from the body.

Each workman's tools should be kept in a box or rack convenient to his work area. The box should have designated places for wire brushes, chisels, saws, and knives to avoid sharp edges being exposed.

Inspection. Permissible wear limits for tools should be set up as a guide for inspection when they are returned to the crib. Lacking such standards, the attendant or inspector should be qualified to pass on the condition of the tool.

Periodic inspections of tool operations are needed to insure efficient control. Inspections should include housekeeping in the tool crib, tool service, number of tools in the inventory, handling procedure, and condition of tools.

Maintenance and repair require adequate facilities, such as work

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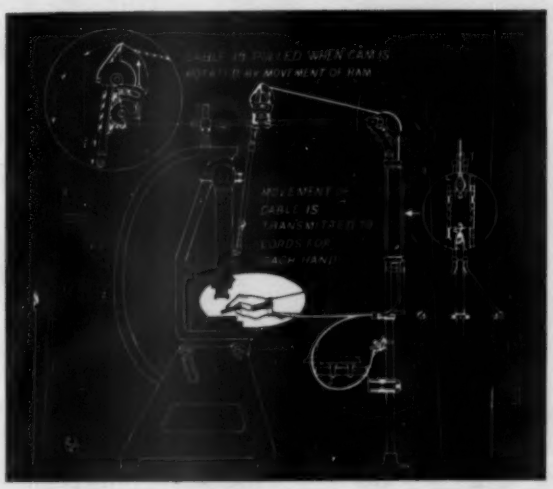
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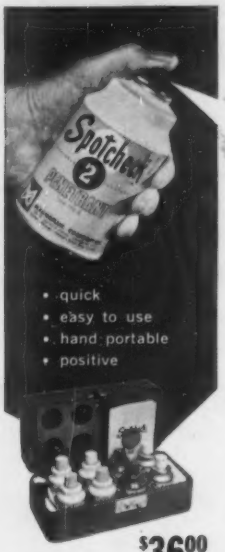
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benches, vises, forge or furnace for hardening and tempering, tempering baths, repair tools, grinders, goggles, and adequate lighting. Repairs should be done by trained men.

Spark-Resistant Tools

Tools of nonferrous materials are often used where flammable gases, highly volatile liquids, and other explosive substances are used or stored. These tools are made of such metals as aluminum, bronze, brass, and beryllium-copper.

Some substances easily ignited include gunpowder, lint, TNT, carbon disulfide and ethyl ether.

Being softer than steel, nonferrous tools are less likely to break off fragments from the metal being worked on by the tool.

With continued use, these tools may become impregnated with particles of foreign substances which may cause sparks if not removed. Frequent inspection is needed.

Portable Electric Tools

Safety switches, which operate the motor only while the switch is held in the closed positions, should be used.

Grounding the housing by means of a third wire or central grounding is the most practical method of safeguarding against shock. These power tools should be tested periodically to determine if the ground is effective.

References—Portable Hand and Power Tools

National Safety Council

Accident Prevention Manual for Industrial Operations; 4th ed.

Grounding Portable Electric Equipment; Data Sheet 299.

Electric Hand Saws; Data Sheet 344.

Electric Cords and Fittings; Data Sheet 385.

Explosive Splitting Wedges or Guns; Data Sheet 321.

Portable Reamer Drills; Data Sheet 497.

Portable Power Chain Saws; Data Sheet 320.

Powder Actuated Hand Tools, Data Sheet 326.

Blow Torches and Plumbers' Furnaces; Data Sheet D-470.

National Safety News

Check It to Check Your Accidents; George MacDonald, Feb. 1953.

Why Electric Tools Are Safe; E. L. Connell, Apr. 1954.

A New Look at Electrical Grounding; W. E. Mesh, Aug. 1960.

A Little Lubricant

Can keep your plant's machinery humming.

HIGH-SPEED machinery depends on often lubricated, satisfactorily operating bearings for production efficiency. And with these demands have come new lubricating systems and lubricants to match.

Such an important part of a preventive maintenance program as lubrication should be handled on a definite schedule.

Lack of lubrication results in hot bearings, shutdowns, and fires.

Over-oiling motor bearings causes oil to drop or be thrown on insulation of electrical wiring. Oil deteriorates the insulation, exposing live conductors that will arc and cause fires or electrically charge ungrounded surfaces. Oil on the floor creates slipping and fire hazards.

A survey of plant equipment will determine lubrication requirements. This information should be entered on machinery records.

Commonly used lubrication methods are:

1. Capillary oilers.
2. Wick oilers.
3. Ring and chain oilers.
4. Gravity feed oilers.
5. Pump feed oilers.
6. Cartridge oilers.

Of course, these methods depend on bearings in use on the job. Of the many under development are two relative newcomers: oil impregnated bearings and Teflow TFE-fluorocarbon resin bearings.

Teflow plastic bearings seem to have a natural slipperiness, with a coefficient of friction of 0.04 on steel. This is considered low for a solid – comparable to ice rubbing against ice – and the static and dynamic coefficients of friction are equal.

Also, this TFE-fluorocarbon resin is reported inert to almost all chemicals and solvents. It is capable of continuous service at 500F. Dielectric properties are rated essentially constant at all frequencies and over the temperature service range of TFE resins.

In addition, this plastic type of bearing is tough, flexible, and very few materials will stick to its surface. It absorbs little moisture and is considered weather resistant.

Some machines have hundreds of remote bearings, and these can be served efficiently and economically by centralized systems. Clean oil or grease is supplied under pressure from the central pumping unit to every bearing.

The lubricant is renewed as often as the machine and operation require. This may be once or twice each shift or several times an hour.

On some systems an indicator signals delivery to each bearing of the correct amount of oil.

With a central pressure system there is no need to stop the machine for lubrication. The hazardous job of crawling over machines is eliminated.

Pressure lubrication systems require special greases. Silicone grease, one of the newer lubricants, has shown unusual ability to stand up under high speeds and high temperatures.

Older Installations. New machines usually have built-in lubrication systems. Older installations were designed for the oil can, and it may not be practicable to add an automatic system. In such cases one or more of these methods may be used for reaching remote bearings:

1. A service platform or runway giving access to several bearings. Moving parts of machinery should not project over platforms. If this is unavoidable, these parts should be enclosed.

2. A small car suspended from an overhead I-beam enables the oiler to travel parallel to the line shaft and reach bearings.

3. Long-spout gravity flow or force-feed oil cans enable the oiler to stand in the clear. Some cans have spouts long enough to reach overhead line-shaft bearings from the floor.

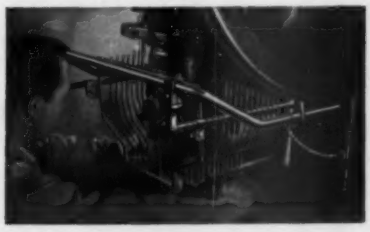
4. Oil reservoirs at individual bearings with control devices operated with hand poles.

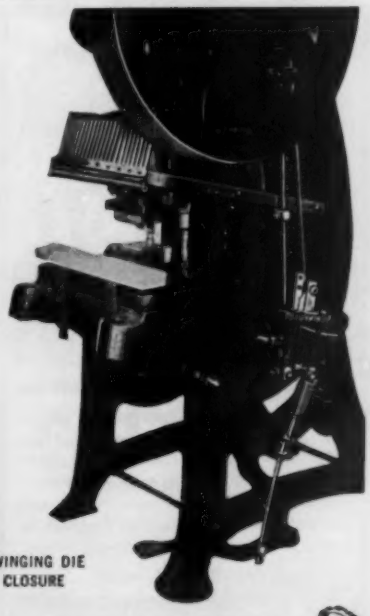
5. Extension pipes on bearings where grease or oil cups are in the danger zone. These may not be practical where low temperatures make it difficult to force oil or grease through the pipes.

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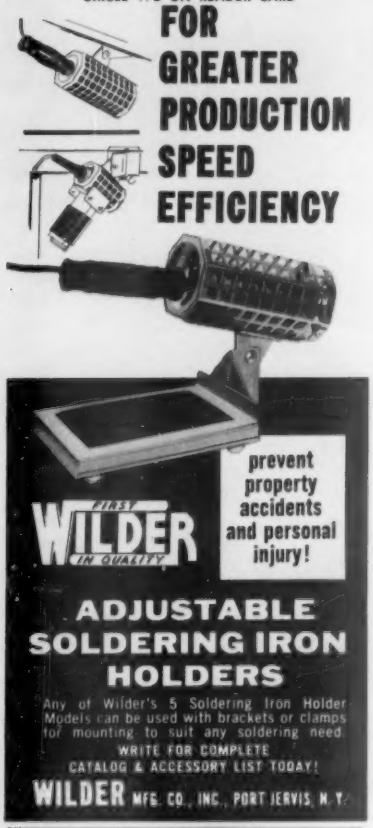
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Taming Power Presses

A recent revision in the ASA code takes the middle road, but time is on safety's side

By H. B. DUFFUS

WITH over a quarter of a million mechanical presses now in operation throughout the country, serious thought has to be given to improve safety in these operations. The need for this is emphasized by the high potential hazard to the press operator and die setter as they feed and remove material from under the punch, or during die setting operations. Past experience has shown that press operations contribute to a high percentage of finger, hand, and arm amputations in industry.

The press builder has done much during the past decade to make the power press a more safe and reliable tool. Better frame design, improved clutch mechanism, and the development of better press control systems have made it possible to apply tools and dies that permit automatic, semi-automatic or remote feeding. Improved press design also facilitates the application of safety devices that insure operator safety on those operations that have to be fed under the punch by hand tool.

While this improved technology is now available on new presses, it will be many years before their total effect will be apparent in press operations. The average age of presses now in use throughout industry is 20 years. By converting clutches, air valves, limit switches, and control systems, many of the average age presses now in use can be brought up to date. The importance of this is enhanced by the fact that a very high percent of the presses now in use will still be operating for the next 20 years, and when modernized the life of the press may be doubled.

Project Began in 1920

The American Standard Safety Code for Power Presses, B11.1, is one of the oldest American safety standards. The project was initiated back in 1920, and the first edition sponsored by the National Safety Council is dated 1922. Since that time, there have been four revisions — 1924, 1926, 1937 and the present standard dated 1948. Work on the latest revision, recently approved and scheduled for publication in April, 1961, started in 1953. The work of this committee has been complicated by the wide variation of operations and operating conditions. Metal stamping, forming, and bending requires a broad range of presses with great complexity of work tools and press applications.

Improvement in press design, performance, and a wide range of safety devices kept influencing the committee on revision towards setting safety standards that would assure press operator safety under most operating conditions. For example, the statement, "press operator shall not be permitted to place his hands within the point of operation to feed or remove material," would completely eliminate amputations, and with modern press setups this is very practical. However, the trade has too

---

This paper was presented by Henry B. Duffus at the 1960 National Safety Congress one month prior to his death. Mr. Duffus, past president of ASSE and past chairman of the National Safety Council's Automotive and Machine Shop and Electrical Equipment Sections, also was chairman of the ASA Sectional Committee B11, Safety Code for Power Presses. As accident prevention administrator for the Westinghouse Electric Corp., he coordinated corporation policies as they related to accident prevention.



This modern power press is guarded almost entirely. Note die completely enclosed by a permanent barrier, gravity feed slide, and trip pedal safeguarded by a mousetrap door.

many older presses in use and on such a wide diversity of operations that such an operating standard is not acceptable at this time. Similarly, improved design and availability of safety devices influenced the committee towards standards of compliance that would assure employee safety, providing the equipment was applied, used and maintained as intended. Experience dictated that this was not practical, so many of the excellent features available to the trade could not be fully applied in this revision. The committee had to be satisfied with providing a standard that applies all of the advantages of modern technology, consistent with its practical application to press operations.

To take full advantage of improved safety design and construction, and in the improved method of press feeding and material handling, this latest revision points out that maximum safety can be ob-



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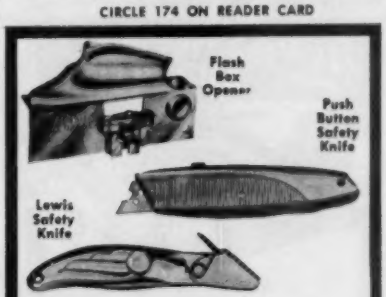
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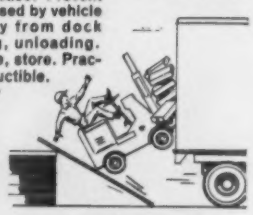
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tained by providing the means that will make it unnecessary for the operator to place his hands or any part of his body within the point of operation to feed or remove material. These objectives can be obtained by:

1. Where practical, limiting any opening at the point of operation to ¼ inch.

2. Using automatic or semi-automatic loading and unloading of the dies or proper use of point of operation enclosure guards.

3. The use of auxiliary protective devices to control access to the point of operation. In addition to these safety devices, the use of hand tools or other feeding and stock removal methods should be used – methods that would make it unnecessary for the operator to place his hands in the point of operation.

Changes in New Standard

The three most significant changes in the revised standard are:

1. The revised standard covers only power presses. Because of the difference in press design and construction of foot and hand presses, it was agreed that foot and hand presses would be best covered by a separate code. The request for this separate code has been made and we will start organizing a committee immediately after B11.1 is published.

2. A clean-cut definition between a guard and a safety device.

A guard is defined as a physical barrier between the operator and the point of operation – either a permanent part of the press or die, or interlocked into the press control circuit so that the guard must be in place to make the press operative.

A device is a machine control or an attachment which allows the operator access to the point of operation for loading or unloading the die. It either prevents the normal operation of the press until the hands are out of the danger zone, or it automatically removes the hands as the press slide descends.

3. A more complete definition of hand tools and hand tool feeding.

While hand tools are not recognized in the standard as safety devices, it is emphasized that hand feeding under the punch is dangerous and that on secondary operations where hand feeding is required, hand tools should always be used, since adherence to this principle will keep the hands out from under the punch – if the hands are not permitted under the punch, fingers cannot be amputated.

4. Additions have been made to the appendix that will do much to make the standard a more useful tool for the prevention of press accidents.

Code States Minimum

It is recognized that the standards as outlined in this code are the minimum standard of requirements for safe operation of power presses. As with all other American safety standards, it has been developed under the consensus principle, so that each party having a reasonable interest in the standard had a voice in its acceptance.

The appendix is not a part of the standard; it is used to describe and illustrate other suggested means of protection for press operators and to define or describe any parts of the standard that could be misinterpreted. In Section 4A of the appendix titled "Press Construction and Installation" we have tried to point out that while much can be done for operator protection by the use of safety devices, the press builders have available auxiliary equipment that reduces appreciably the probability of press failures. In fact, through the addition of a second air valve or ram control limit switch, a detection system that will respond to a valve failure, a fail-safe control system, the probability of a press malfunctioning can be in the order of fifty million to one. By taking full advantage of the technological advancements made in press design, the safety of press operators and the overall efficiency of press operations can be enhanced substantially. In the majority of cases, the increased press efficiency more than compensates for the cost of modernization.



SECTION 9

PLANT PROTECTION

IN SECTION 9:

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Damage Control 242

Fire Protection Engineering 256

Is Fire Protection Worth $200 Million?

By MARSHALL E. PETERSEN



Marshall E. Petersen is the consultant fire protection engineer for the National Safety Council's Industrial Department, and author of Section 9 of this issue of *National Safety News*. He has a B.S. degree in safety and fire protection engineering from Illinois Institute of Technology. Petersen is a member of the American Society of Safety Engineers and the Greater Chicago Safety Council. Before joining the NSC staff, he was supervisor of safety and fire protection, Allied Chemical Corp.; industrial hygienist, Illinois Department of Labor; and safety engineer, Argonne National Laboratory.

IF TODAY is an average day, about 100 industrial plants in this country will be seriously damaged by fire; and out of those that are destroyed 43 per cent will be forced to go out of business. This day-by-day industrial fire loss claims over 6500 lives and almost $200 million annually. The fact that our national fire loss has been estimated at ten times what it should be serves as a compelling incentive to review our fire prevention activities with renewed enthusiasm.

Safeguarding the industrial plant against fire is more than just a means of reducing insurance rates and assuring continuous production. It is management's moral obligation to protect the lives of employees, as well as a matter of compliance with city and state laws.

The ultimate responsibility for fire safety rests with top management, and rests there even though secondary responsibility for accomplishment is extended down through the lines of organization.



Industrial fire protection programs need to be re-evaluated and up-dated to coincide with the latest progress in industry. A multitude of new chemicals and materials have been developed and many more appear each day. Virtually every industry is exposed to modernization through automation, new materials, processes and equipment, and improved methods. Not to be overlooked are the advancements made in fire fighting equipment and extinguishing methods.

Each industrial plant presents its own problems, yet the basic principles of fire protection apply to almost all plants. Regardless of how a plant fire protection program is set up, it can profitably be reviewed by considering the "five essentials of fire protection."

1. Prevention of personal injuries which may result in the event of a fire, panic or other emergency.
2. The fundamentals of fire protection engineering are essential factors in designing and protecting manufacturing facilities against disaster.
3. Regular, periodic inspections will serve as the rule and guide for effective preventive measures.
4. Early detection and extinguishment can mean the difference between controlling a small fire and fighting a conflagration.
5. The preventive measures of a damage control program will minimize losses due to fire and fire extinguishment.

Prevention of Fire or Panic Injuries

Compliance with standards, and teaching people what to do in case of fire, are essential if injuries are to be avoided

OF THE MANY FACTORS involved in catastrophe prevention, the most vital is the adequacy of building exits. Every operating executive should be anxious to take all reasonable precautions to prevent fire, panic, or other forms of calamity. The moral and legal implications of his failure to do so are obvious.

Plant operators and those entrusted with the safety of their employees must seriously consider various problems when planning emergency evacuation of buildings. In many cases panic has caused more loss of life than the fire; every effort should be taken to prevent it. Fire is still the primary cause of panic, but boiler or air tank explosions, chemical explosions, skylight collapse, or structural failure may require prompt and orderly use of emergency exits to avoid panic or loss of life. Neither these nor other possibilities can be ignored in preparing an emergency exit plan. No plans or physical alterations should be made which might prevent safe evacuation under ANY circumstances that might arise.

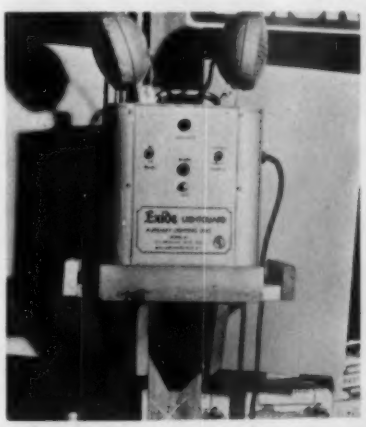
The smooth, safe functioning of an exit plan requires a thorough knowledge of plant operations, types of employees, number and types of exits available, width of exits, proper location of exits, possible alternate exits, degree and location of hazards, and warning and evacuation facilities.

Minimum Standards

In only a few states can the employer feel assured that by complying with local requirements he has actually given his workers a fair chance to escape safely in case of fire. Management should not wait for, nor depend on, local or state inspectors to make recommendations before improvements are made. In many instances even complete compliance with such recommendations would not be a positive guarantee that complete protection is provided, for many local codes present only legal requirements, and sometimes cover only questions of new building construction.

The Building Exits Code, developed by the National Fire Protection Association, is considered authoritative and its provisions should be considered as minimum standards. Where local codes containing more rigid requirements are in existence they will, of course, take precedence.

Good communications are necessary to cope with a disaster situation. A system for alerting and directing employees to safety is the next essential step in evacuation. A clearly audible emergency alarm should sound simultaneously throughout each building and building section, and special signals may be adopted to indicate the general locality of the fire or distaster area. The audible alarm signal system should be supplemented by a separate set of arm or other visible signals in case the alarm system fails or noise prevents the occupants from hearing the regular signals. In most plants a definite fire alarm system is set up, using the plant whistle or other suitable means for alerting employees. To avoid confusion with the regularly used whistles, some plants have special whistles or sirens. Electric alarms are preferred to mechanical ones except in open shops where there is only one alarm-summons station and one alarm-sending device, such as a wire or chain-controlled gong. In that case the alarm may be manually-operated. Manually-operated alarms should supplement general, electric alarms. Closed circuit systems of the type specified by the National Fire Protection Association in their Standards No. 71 and No. 72, are recommended.



Emergency lighting for power failures.

Drills Necessary

Regardless of what method is used to alert employees, they should thoroughly understand what the signal means and how to respond in the safest possible manner. Training employees to leave their work place promptly, upon proper signal, and to evacuate a building speedily but without confusion, is largely accomplished through fire or emergency drills. Exit drills must be carefully planned and carried out in a serious manner under rigid discipline so as to provide positive protection in the event of a real emergency. Where it is impossible to hold regular drills, periodic instructions should be distributed to all employees, and a skeleton exit drill organization formed from the supervisory staff.

Emergency exit drills also serve as a valuable check on the adequacy and condition of the exits and alarm system. Any deficiency should be reported immediately and permanently corrected. Careful plans must be made to eliminate the possibility of a panic in the event of any emergency, regardless of cause, and to guarantee the smooth functioning of the evacuation plan. Reference should be made to the National Fire Protection Association pamphlet *Employee Organization For Fire Safety* for complete and detailed plans for exit drills.

CIRCLE 178 ON READER CARD→

Early Detection and Extinguishment

Five minutes when a fire first starts is worth five hook and ladder companies five hours later

WHAT EMPLOYEES do when a fire breaks out greatly influences the amount of damage that results. Since the first few minutes are of prime importance, proper steps must be taken quickly.

The most critical factor in any fire is the element of detection. Almost every fire has a small beginning.

It is common practice to rely heavily on the individual employee to discover a fire in its incipient stage. Even though many fires are controlled in this manner, human action and judgment of even the well trained worker is subject to error. In the majority of cases it is important to first sound the alarm and then attempt to extinguish the fire. Either a manual type alarm should be sounded or at least one other person should be notified who can turn in the alarm.

Almost daily, fire in some part of the country provides an impressive lesson in the danger of delayed alarms. Usually such fires result in the loss of life or serious injury and often the building is totally destroyed.

Records show that most big fires occur in buildings or plants while they are not in operation; that is, after working hours or during long week ends or holidays. At these non-productive times the watchman protects his plant against many perils. Without him, a plant working one shift five days a week is vulnerable about 75 per cent of the time. The principle advantage of a watchman is that he is immediately available if fire breaks out or other emergency arises.

The well protected plant frequently supplements the skill and vigilance of plant guards and watchman with automatic detection and extinguishing devices.

Alarm Systems

Alarm systems range from simple manually operated bongs or coded blasts on the factory whistle to intricate automatic systems which detect and locate the fire as well as give off an audible signal.



Regular testing of post indicator valves controlling water supply to sprinkler system and fire hose keeps the system in readiness.

Supervisory Systems. Watchmen's supervisory systems transmit and record signals made at watchman's key stations. This protection is frequently combined with fire-alarm systems and supervision of sprinkler systems. A plant guard's failure to check in at any station along his route is promptly recorded at the control desk or panel.

These systems operate on three main plans:

Central Station System. Signals are transmitted to an independent central station where they are recorded and proper emergency action taken. The central station may serve several companies.

Proprietary System. Similar to a central station but controlled and operated by the owner of the protected property.

Local System. Owned and operated by the protected company but does not have an operator constantly on duty at a central station.

Directors and Alarms. Automatic detection and alarm devices may be operated either by heat or smoke.

Heat-actuated systems are of two types: temperature-rate-of-rise, or fixed temperature.

Temperature-rate-of-rise systems operate on the principle that air expands when heated. This system usually consists of a length of small tubing containing air at atmospheric pressure, which is connected to a bellows operated switch. Any sharp rise in temperature will cause the air in the tubing to expand rapidly, which in turn will cause the diaphragm of the bellows to expand and close the alarm switch. Features in the design prevent false alarms from normal temperature changes or even short sudden surges of heat.

Fixed-temperature detectors are set for some specific above-normal temperature. There are a number of devices of this type available. All work on the same basic principle: when the room temperature reaches a specified level the unit will operate and sound an alarm.

Smoke detectors detect deep seated smouldering fires and give a signal before flames are visible. Continuous samples of air are drawn from certain protected spaces and are passed through an analyzer tube. Here the air sample is passed through a beam of light. If any smoke is present it will reflect light onto a photoelectric cell, increasing the cell output and sounding the alarm.

Nuclear detectors are probably the most sensitive and quick acting device available. Combustion generates minute and invisible products not detectable at first by the human senses or by conventional detectors. In a nuclear detector a small radioactive element in a ceiling-mounted chamber operates when there is a change in the ionized air sample. The invisible products of combustion will cause this change and send the alarm signal to a monitor panel.

Although this type of detector is













257 of the 500 largest U.S. corporations rely on ANSUL for basic fire protection. Thousands of other companies, large and small, have found the right answers to their fire protection problems in Ansul's complete line of fire extinguishing equipment.*

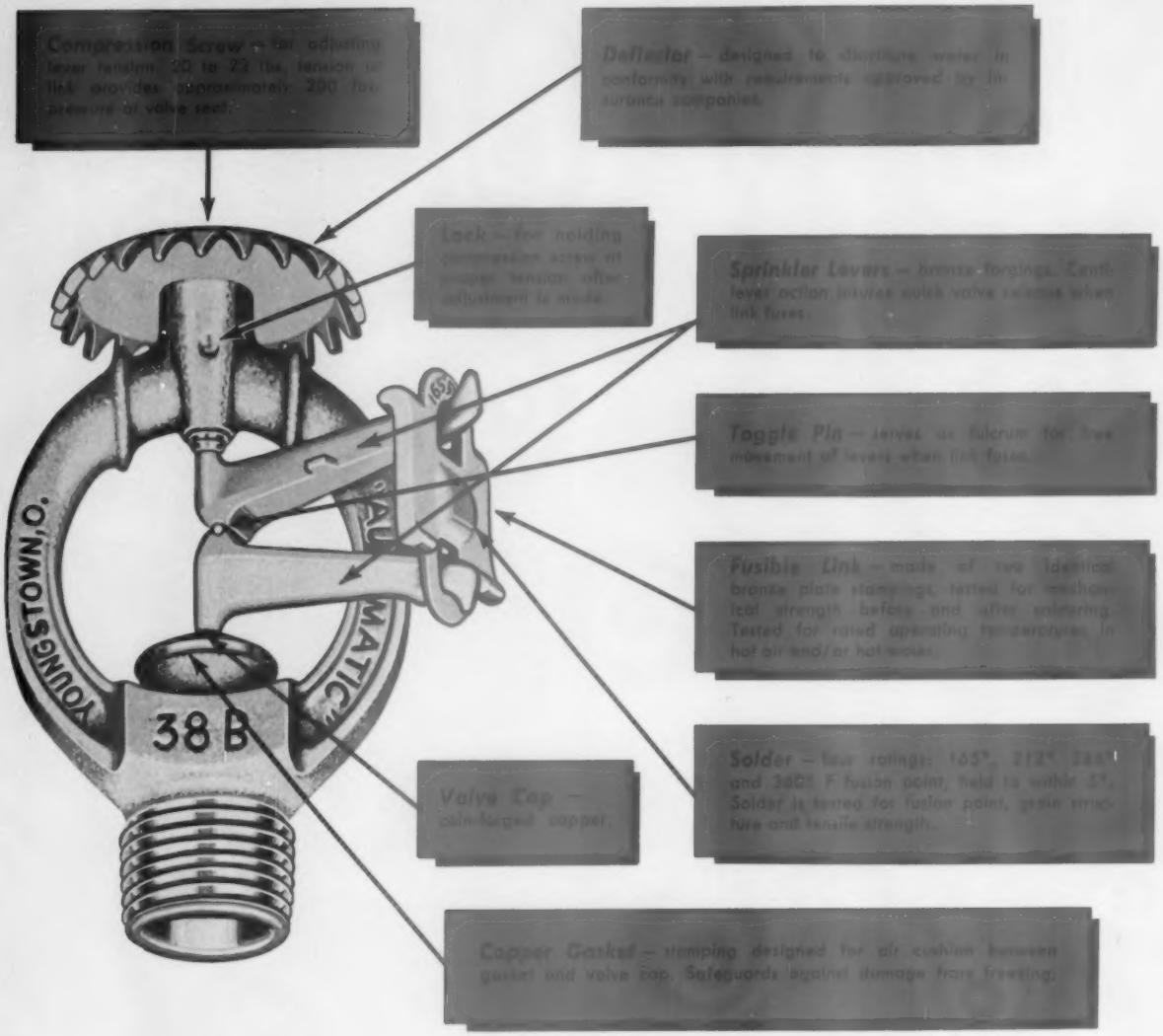


We'll be happy to send you our latest catalog describing in detail Ansul's line of hand portable fire extinguishing devices and wheel extinguishers, automatic, stationary, mobile units and automatic systems. Your local Ansul Man is a trained fire protection expert, available to survey your plant and counsel on your fire protection requirements. Call him for an appointment (he's listed in the "Yellow Pages") or write ANSUL CHEMICAL COMPANY, Marinette, Wisconsin.

ANSUL

Fire Equipment
Extinguishing Products
Industrial Chemicals

TYPICAL SPRINKLER HEAD



a highly sensitive device, special precautions should be taken when they are exposed to fire fighting activities. If large quantities of water, such as would be discharged from sprinklers or hoses, are directed against the unit it is very possible that the radioactive source will be leached out of the chamber and contaminate the area.

Sprinkler Systems Desirable

Automatic sprinklers are by far the most reliable and effective means of fire protection. Other forms of protective equipment, as well as automatic alarms, have their special place, but none can ever be an effective substitute for automatic sprinkler systems.

Sprinkler Head Types

Various types of heads are available for use under a wide range of temperature conditions. Heads of a higher rating than necessary are slow to operate. A fire would gain considerable headway and open more heads than needed. Soldered links with too low a rating may become weakened and operate prematurely. For normal room temperatures up to 100 F, ordinary sprinklers are used. When temperatures are higher, thermometer readings should be taken near the ceilings at the level of the sprinkler head and ratings selected accordingly. It is important to remember that sprinkler heads are precision devices and should only be used with temperature ratings suited to the location.

Conventional sprinkler heads discharge most of the water directly against the ceiling which in turn splashes off the ceiling not in a diffused form, but as coarse drops and fine streams. The spray sprinkler head was developed to provide greater protection. As the water is discharged from the head it forms fine droplets which are uniformly distributed at a wide angle from the sprinkler. The drops are fine enough to give maximum cooling, but coarse enough so that they may be directed to fill the entire space from the sprinkler head to the floor.

From

AMERICAN LAFRANCE

The TRUSTED Name

in

Fire Extinguishers

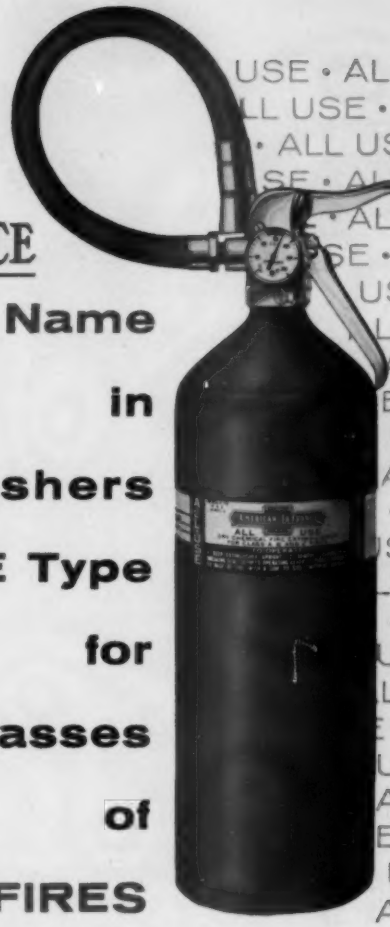
ONE Type

for

ALL Classes

of

FIRES



AMERICAN LAFRANCE announces the NEW "ALL-USE" Fire Extinguisher to handle A, B or C fires quickly, effectively. Engineered to the high quality standards of American LaFrance, and subjected to rigid laboratory and field tests, the "ALL-USE" eliminates the fire emergency confusion and delay in finding the right type of extinguisher for the fire. Easy to use, pull pin, squeeze handle . . . Non-toxic, non-corrosive, non-freezing. Available in 10 and 20 lb. sizes. *(The American LaFrance ALL-USE 10 lb. is the only 10 lb. extinguisher approved for A, B or C fires. Its rating is equal to most competitive 15 lb. extinguishers.)*

For further information or a demonstration in your plant or a complete survey of your fire protection needs, phone, wire or write:
American LaFrance, 53 E. LaFrance Street, Elmira, N. Y.

APPROVED BY:
Underwriters' Laboratories
Ratings 10 lb. 1A:16B:C
20 lb. 3A:20B:C
Factory Mutuals
U. S. Coast Guard Approval
No. 162.010/181/0
No. 162.101/180/0

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Everything you need to fight fire!



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The World's First and Largest Makers of Fire Fighting Equipment

CIRCLE 179 ON READER CARD



Sprinkler heads should be located not only to protect open areas, but also under wide benches or tables, in closets or concealed spaces, dryers and other locations shielded from the discharge of the ceiling heads.

Ample space is necessary for good water distribution. Therefore, always allow 36 in. below sprinkler deflectors where storage consists of tightly packed piles of cases, bales or crates. Where storage is less dense, less space is required, but the clear space should never be less that 18 in.

The most common sprinkler system is the wet pipe, wherein the piping is filled with water under pressure that is immediately discharged when the sprinkler head operates and continues to flow until shut off.

The dry pipe system is used in buildings or areas which are subject to freezing temperatures. The piping contains air under pressure which holds back the water by means of a differential dried pipe valve, located in a heated area. When a sprinkler head opens, the air will be released from the system causing a drop in pressure which automatically trips the dry pipe valve, admitting water into the piping.

There are numerous other sprinkler systems for special hazards, the most common being: deluge system, water fog system and air foam system.

Sprinkler Water Supplies

To give effective protection, automatic sprinklers need reliable water supplies adequate both in volume and pressure. Volume is needed to supply all heads likely to open, in addition to hose streams. Pressure is needed to give good distribution to top-story sprinklers.

Two independent water supplies are necessary at most plants. The "primary" is instantly available to furnish water for automatic sprinklers when they first open. The "secondary" is to maintain protection in emergencies when the primary is out of service, and to reinforce a primary supply in case of fire.

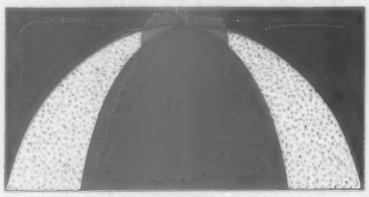
Reliable public water systems are generally the best primary supplies. Connections from two different street mains are desirable, to obtain greater volume than one connection could provide and to minimize chances of interruption if one of the street mains is out of service.

Fire pumps with ample suction supply are the most satisfactory secondary source, being capable of delivering water at high pressure for a long time. They should be located where they will not be put out of service by any fire likely to occur in the plant. Power for the pump must be available at all times and so arranged that it will not be interrupted by a fire.

The flow of water in a system can be used to sound an alarm for fire and accidental leakage. The alarm check valve is installed in a sprinkler riser, and can be connected to a hydraulic gong or an electric bell.

A less expensive type, the waterflow indicator, is a paddle-like vein projecting into the piping. An alarm is sounded when the vein is deflected by the flow of water.

RELATIVE DISCHARGE PATTERN FOR "CONVENTIONAL" AND "SPRAY" SPRINKLERS



COLOR AREA—CONVENTIONAL
DOTTED AREA—SPRAY

Water-flow alarms are especially desirable where building contents are susceptible to water damage. They are useful supplements to watchmen's service.

Choose Right Extinguisher

Today more than ever before, there is opportunity to select the best portable fire extinguisher for any particular extinguishing job. There are various types, styles and sizes of portable units available, each filling a particular need in fire protection. Their necessity and importance is confirmed by the fact that insurance credits are given for comformance to the National Fire Protection Association Standard No. 10, regardless of what other fire equipment (sprinklers, hose lines, etc.) might exist in the plant.

There are three general classes of fires as set forth in the National Fire Protection Association Standard No. 10.

Class "A" fires: Fires in ordinary materials such as wood, paper, excelsior, rags and rubbish, where the quenching-cooling effect of quantities of water are of primary importance.

Class "B" fires: Fires in petroleum products or other flammable greases, oils, paints and the like, where the blanketing-smothering effect is most effective.

Class "C" fires: Fires in or near energized electrical equipment where the electrical nonconductivity of the extinguishing agent is of primary importance.

There are two other groups of fires which require special consideration. The nature of these fires are such that special agents have been developed to extinguish them.

Pyrophoric metal fires: Fires in combustible metals such as magnesium, lithium, potassium, sodium, zirconium, etc.

Pyrophoric liquid fires: Fires in combustible liquid metals such as triethylaluminum.

Based on this classification and the principles of combustion, Underwriters' Laboratories established standards which also consider fire extinguishment potentials as determined by physical testing. These standards clearly point out that different types of fires can be best extinguished by different methods. Therefore, the first requirement that should be considered in establish-

From NATIONAL FOAM... Fingertip Information on fire protection for:

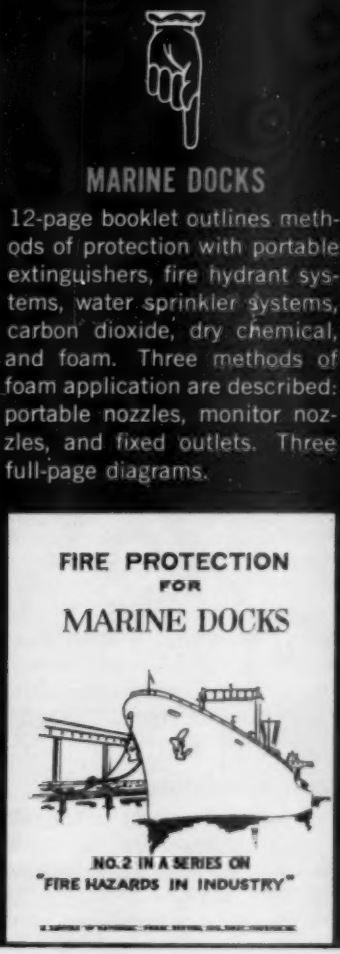
FLOATING ROOF TANKS

16-page booklet describes methods of foam application through portable nozzles, portable towers, wind girder flooding systems, roof mounted systems, fixed foam chambers. Additional information on foam dams and foam liquid proportioning. Six engineering diagrams.



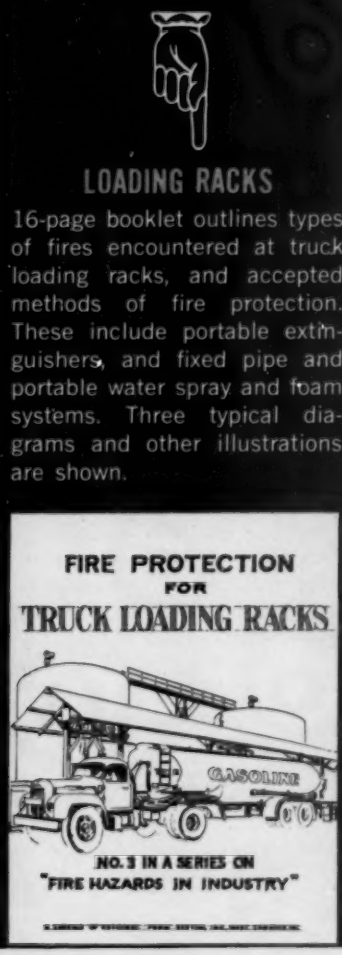
MARINE DOCKS

12-page booklet outlines methods of protection with portable extinguishers, fire hydrant systems, water sprinkler systems, carbon dioxide, dry chemical, and foam. Three methods of foam application are described: portable nozzles, monitor nozzles, and fixed outlets. Three full-page diagrams.



LOADING RACKS

16-page booklet outlines types of fires encountered at truck loading racks, and accepted methods of fire protection. These include portable extinguishers, and fixed pipe and portable water spray and foam systems. Three typical diagrams and other illustrations are shown.



National Foam System, Inc., West Chester, Pa.
Please mail the fire protection booklets checked:

Name .....

Company .....

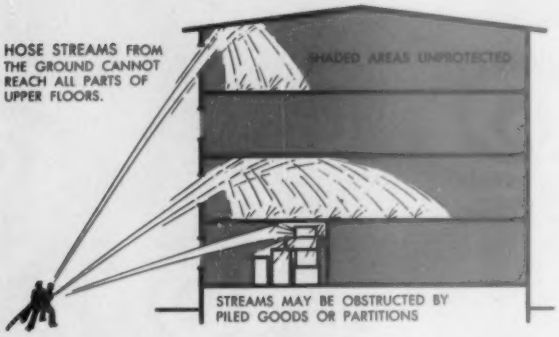
Address .....

- ☐ Floating Roof Tanks
- ☐ Marine Docks
- ☐ Loading Racks

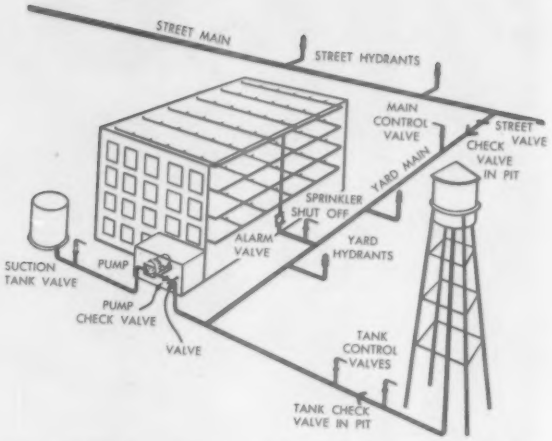
CIRCLE 180 ON READER CARD



SPRINKLERS COVER ALL SECTIONS EQUALLY. ONLY AS MANY SPRINKLERS OPEN AS ARE NEEDED, THUS LIMITING WATER DAMAGE.



THIS REQUIRES LADDERS AND WATER-TOWERS, NOT ALWAYS AVAILABLE.



Gravity tanks can be used as primary source of water for sprinklers when public water supplies are weak or not available. Where public water supplies are the primary source of water, and in the absence of fire pumps, gravity tanks may be used as a secondary pressure source. Note that the tank is higher than the most elevated sprinklers.

ing a fire control program is anticipating the type of fire that is likely to occur in a given area; and then provide the proper type of extinguishing agent.

Ordinary fire results from the combination of fuel, heat and oxygen. When a substance that will burn is heated to a certain critical temperature called its "ignition temperature" or "temperature of combustion" it will ignite and continue to burn so long as there is fuel, the proper temperature, and a supply of oxygen. This can easily be illustrated by striking an ordinary kitchen match. The heat generated from friction by drawing the match across a rough surface will cause the fuel to ignite when in the presence of oxygen. We can, therefore, assume that if this concept is true, it should also serve as a basis for fire extinguishment.

Heat can be taken away by cooling.

Oxygen can be excluded by smothering or diluting with an inert gas.

The supply of fuel can be removed or the fire area confined.



Although this principle has been used for many years, actually it is an over-simplification of the combustion reaction. By definition, ordinary fire is the visible light given off from a combustion reaction, created by the application of heat to a substance. This reaction causes the molecular structure of the substance to disintegrate into atoms and free radicals, giving off light and radiant heat as energy. It is the free radicals which interact with oxygen to produce branched chain reactions. Without this branching, which is the intermediate state between the original fuel molecules and the end products of the fire, there could be no flame. This new factor, "Interrupt the flame chemical chain reaction," is extremely important as an explanation of the effectiveness of certain extinguishing agents.

Suiting Extinguishers To Needs

Choosing the right extinguisher is extremely important. All too frequently cost is given more consideration than adequate protection. Remember, good extinguishers of the proper type are not cheap. Although suitable types and sizes are installed in comformance with the National Fire Protection Association Standard No. 10, there is a certain flexibility which can be used to the purchaser's advantage.

The design and operating features, ease of maintenance and the availability of repair service should be considered too. If possible, actually operating and testing the extinguisher may make a great deal of difference in the selection you make.

In general, the types of extinguishers available are:

1. Water-type
   a. Water pails
   b. Pump tank
   c. Cartridge actuated
   d. Soda acid
   e. Stored pressure
   f. Loaded stream
2. Foam
3. Carbon Dioxide
4. Dry Chemical
   a. Cartridge actuated
   b. Stored pressure
5. Vaporizing Liquid
   a. Hand pump
   b. Stored pressure
   c. Stored pressure (High vapor pressure-type)

Water Pails

Although this type of extinguishing equipment is not commonly found, where used it should consist of five filled 12 qt. pails or six 10 qt. pails for each two units of Class A protection. The pails are sometimes placed in water casks so that they can be removed and filled, in quick succession. It is important to treat metal surfaces against corrosion and to keep containers filled at all times. This type of equipment can be protected against freezing with a calcium chloride anti-freeze chemical.

A GUIDE TO SELECTION AND USE OF PROTECTOSEAL EQUIPMENT FOR THE SAFE STORAGE, HANDLING AND USE OF FLAMMABLES

DRUM STORAGE AND TRANSFER



DRUM VENT
For side bung installation. Relieves pressure build-up, provides vacuum relief for 30 and 55 gal. storage drums. Flame arrester built in. FM approval*



END BUNG DRUM VENT
For automatic pressure and vacuum relief of 30 and 55 gal. drums. Equipped with flame arrester. FM approval*



COMBINATION FILL AND VENT BUNG FITTING
Flame arrester permits safe refilling. Automatic pressure and vacuum relief. FM approval*



DRUM TRANSFER PUMP
With built-in fire baffles for safe dispensing from 30, 55 gal. drums. Steady, even liquid flow. UL-FM approval**



SELF-CLOSING DRUM FAUCETS
Rigid or self-positioning types. Fire baffle and strainer built in. FM approval*

SAFE STORAGE OF FLAMMABLES IN PLANT



SAFETY STORAGE CAN
UL-FM approval*

• Double Wall Flame Arresters • Automatic Pressure Relief
• Liquid-tight, automatic closing caps

Protectoseal Safety Containers are made in a wide range of types and sizes. Particular attention to users convenience and fast, easy operating performance make Protectoseal Safety Storage Cans and Safety Dispensing Cans the choice of discriminating safety equipment buyers. Standard cans are made of Terne Plate. Also available in Stainless, Monel Metal and Hot Tin Dipped to meet special conditions.



SAFETY DISPENSER CAN
UL-FM approval*

FLAMMABLES IN THE LABORATORY



OVAL SHAPE SAFETY CANS
Oval shape Safety Storage and Dispensing Cans require far less storage space, permit more containers to be stored in less aren. When grasped by handle, can is in correct pouring position without changing grip. Fire protected filling and pouring openings. Leak-tight seals with automatic pressure relief. Terne Plate is standard; available in Stainless Steel with Teflon cap gasket. FM approval*

SAFETY TILT CANS
Designed for easy, accurate dispensing of measured amounts of liquid into small capacity receiving containers. Available with Tilt Frames for bench top or floor use, or for vertical wall mounting. Equipped with faucets for slow or fast dispensing. Faucet is brought into correct pouring position by tilting the can. Can returns to upright position when released. Cans are 5 or 10 gallon capacity. FM approval*



PRODUCTION and PARTS WASHING



PLUNGER CAN
For quick, one-hand moistening of swab, brush or cloth. Depressing spring loaded dasher pumps measured quantity of fluid into cup. Release and excess drains back into can. 5 sizes—dashers 1" to 7" dia. FM approval*

WASH TANK
Two handled perforated basket for fast, easy parts agitation. Self-draining by resting basket on lugs at top of tank. Renewable fusible link melts at 160°F. automatically drops cover to snuff out fire. 4 sizes ranging from 8½" x 8½" x 9¾" to 15" x 15" x 15". FM approval*



BENCH PARTS WASHER
Keeps workers hands out of solvent. Removable parts basket has handle. Depress spring mounted fire baffle dasher for solvent, release to drain. Without basket, large cloths or swabs may be saturated. 3 pint capacity. Basket and dasher — 5⅝" dia. FM approval*



DISPOSING OF FLAMMABLE WASTE



LIQUID DISPOSAL CAN
Provides safe, convenient intermediate station for receiving and storing waste flammable liquids. Spout cap opens wide and large receiving opening facilitates quick disposal of liquids from laboratory beakers, etc. without a funnel. Cap may be locked open. Available with Terne Plate or Stainless Steel body. Opening protected by flame arrester. Two sizes: 2 gal. and 5 gal.

*Factory Mutual
**Underwriters' Laboratories

OILY WASTE CAN
For safe disposal of oily waste or flammable soaked materials. Self-closing cover prevents spontaneous combustion. Foot treadle operated, square shape gives maximum stability and capacity in minimum floor space. Raised bottom with air holes provides ventilation, prevents vapor pockets from forming. 5 sizes: 6, 8, 10, 14, 21 gallons. UL-FM approval**Also available—detachable Self-Closing Drum Cover to convert used 30 or 55 gallon drum or trash can to safe receptacle for combustible materials.



Write for complete Protectoseal Red Book Catalog





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IN CANADA: SAFETY SUPPLY COMPANY, TORONTO

CIRCLE 181 ON READER CARD

TYPE EXTINGUISHER BY AGENT	RATINGS AS GIVEN IN UL LISTINGS																		
NOMINAL CAPACITY AND DESCRIPTION OF DEVICE	1A	2A	3A	4A	10A	20A	½-BC	1-BC	2-BC	4-BC	6-BC	8-BC	10-BC	12-BC	16-BC	20-BC	40-BC	80-BC	160-BC
WATER TYPES																			
1¼ — 1½ Gallon	■																		
2½ Gallon	■	■																	
4 Gallon	■	■	■																
5 Gallon	■	■	■	■															
17 Gallon	■	■	■	■	■														
33 Gallon	■	■	■	■	■	■													
LOADED STREAM																			
1¾ Gallon	■						■	■											
2½ Gallon	■	■					■	■											
FOAM																			
1¼, 1½ Gallon	■						■	■	■										
2½, 5 Gallon	■	■	■	■			■	■	■	■	■								
17 Gallon, Wheeled	■	■	■	■	■		■	■	■	■	■	■	■	■					
33 Gallon, Wheeled	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
CARBON DIOXIDE																			
2 to 4¾ Pound							■	■	■										
5 Pound							■	■	■	■									
10 Pound							■	■	■	■	■	■							
15 Pound							■	■	■	■	■	■	■						
20 Pound							■	■	■	■	■	■	■	■					
50 Pound							■	■	■	■	■	■	■	■	■				
75, 100 Pound, Wheeled							■	■	■	■	■	■	■	■	■	■			
DRY CHEMICAL																			
1 Pound							■	■											
1½ Pound							■	■	■										
2, 2½ Pound							■	■	■	■									
2¾, 4 Pound							■	■	■	■	■								
5 Pound							■	■	■	■	■	■							
6, 8 Pound							■	■	■	■	■	■	■	■					
10, 12, 15 Pound							■	■	■	■	■	■	■	■	■				
20, 25, 30 Pound							■	■	■	■	■	■	■	■	■	■			
75 Pound, Wheeled							■	■	■	■	■	■	■	■	■	■	■		
150, 200, 250, 300 Pound, Wheeled							■	■	■	■	■	■	■	■	■	■	■	■	
350 Pound, Wheeled							■	■	■	■	■	■	■	■	■	■	■	■	■
ALL PURPOSE CHEMICAL																			
5 Pound							■	■	■	■	■	■	■	■					
15 Pound	■						■	■	■	■	■	■	■	■					
20 Pound	■	■	■				■	■	■	■	■	■	■	■	■	■			
25 Pound	■	■					■	■	■	■	■	■	■	■	■	■			
30 Pound	■	■	■	■			■	■	■	■	■	■	■	■	■	■			
CARBON TETRACHLORIDE																			
1 to 2½ Quart, Pump Type							■												
1 Quart, Stored Pressure							■	■											
2 Quart, Stored Pressure							■	■	■										
1 to 3½ Gallon, Stored Pressure							■	■	■	■	■								
CHLOROBROMOMETHANE																			
1, 1½ Quart, Stored Pressure							■	■	■	■									
2, 2½ Quart, Stored Pressure							■	■	■	■	■	■							
1 Gallon, Stored Pressure							■	■	■	■	■	■							
1½, 3, 3½ Gallon, Stored Pressure							■	■	■	■	■	■	■	■					

Shaded areas indicate maximum ratings given to types and capacities of extinguishers. Not all extinguishers obtain this maximum rating. For up-to-date ratings refer to the Fire Protection Equipment List and Supplements, published by Underwriters' Laboratories Inc., Chicago, Illinois.

Water Pump Tank

Probably the simplest type of fire extinguisher is the water pump tank. They are made in a number of sizes having a liquid capacity of approximately 1½ to 5 gal., with the most common type being 2½ gal. This size weighs about 40 lbs. when filled with plain water, is carried by means of a top handle, and has an effective range of 30 to 40 ft. horizontally. The pump is so designed that water is discharged on both the up and down strokes. The time of discharge will depend on the operator but should average about 1 minute for the 2½ gal. unit, when operated continuously.

Pump tanks are effective on Class A fires only, where the quenching and cooling effects of quantities of water are of primary importance. For best results, the operator should place his foot on the foot rest, and pump with 6- to 8-in. strokes; first directing the stream at the base of the fire and then following up after the flames, while working from side to side or around the fire if possible.

The main disadvantage of this unit is that it cannot be carried and operated at the same time. However, the features of intermittent operation and ease of refilling are advantages which make it an excellent choice for "stand-by protection" on welding or cutting operations.

Maintenance is comparatively simple since it needs only to be filled with water after use. Periodic examination should include checking the water level and testing the pump, by several strokes on the shaft, discharging the liquid back into the tank. The condition of operating parts should be inspected annually and a drop of light lubricating oil put on the piston rod packing. The tank itself should be checked frequently for excessive corrosion and the foot rest at the bottom of the shell should be in good condition.

Special precautions must be taken when this type of unit is located outdoors or in unheated sections of buildings where it is subject to freezing temperatures, unless charged with an anti-freeze solution. This solution should consist of a calcium chloride base and corrosion inhibitors with a freezing point of at least minus 40 F.

When charging any extinguisher with an anti-freeze solution, the chemical should be thoroughly dissolved in warm water in a separate container and then poured into the extinguisher through a fine strainer to remove any foreign particles which may clog the unit. Greater care must be given in maintaining extinguishers containing anti-freeze

NEW ALL-PURPOSE extinguishers

Now... U. L. and F. M. approved for all classes of fires!

Now you can safely, effectively fight all classes of fire—A, B and C—with a single type of extinguisher! These revolutionary new ALL-PURPOSE Dry Chemical Extinguishers carry *high* Underwriters' Laboratories "ABC" ratings . . . are also approved by Factory Mutual. They provide the most powerful three-in-one fire protection ever offered in a single extinguisher! The 30 lb. model (U.L. rating 4-A, 20-B, C) packs fire-killing power equal to *two* Soda Acid extinguishers (rated 2-A) plus *one* conventional Dry Chemical extinguisher (rated 20-B, C)!



Three-In-One Fire Protection

Available in 20 and 30 lb. sizes, featuring easy squeeze-grip operation . . . no annual recharge. Order today from your distributor! Look in the Yellow Pages under "Fire Protection Equipment." Or write to The Fyr-Fyter Company, Dayton 1, Ohio.

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CIRCLE 182 ON READER CARD

Regular, Periodic Inspections

A conscientious inspector, with solid management backing, can eliminate conditions that lead to fire

THE BEST TIME to stop a fire is before it starts. Even though buildings are properly designed and provided with protective devices and construction elements intended to render fire-safety features, only regular, periodic inspections can assure their full value. In addition to inspections made by insurance companies and by fire protection bureaus of fire departments, every industrial plant should include periodic self-inspections in its fire-safety program.

A careful periodic self-inspection of fire protective equipment is vitally important to make sure that it is in good order and ready to function without delay in the event of fire. Long experience with fire protection maintenance, over a broad field of industrial properties, indicates that such inspections should be made at least weekly to insure reasonable fire safety. Some of the larger plants make daily inspections, with special emphasis on valves controlling automatic sprinklers.

The effectiveness of any self-inspection program depends upon both the management and the inspector. The management should show a genuine interest. It should insist on thorough and intelligent inspections, and stand squarely behind the inspector by carrying out all reasonable suggestions and remedying any weakness reported. The inspector should appreciate the importance of his work, and cultivate good will and respect for his inspections by using good judgment in making recommendations and by enlisting the cooperation of department foremen and others in fire prevention and protection.

The inspector should have adequate time to make a thorough, unhurried inspection. It is advantageous to schedule it at a definite time each week, instead of merely asking the inspector to work it in as his other duties permit. For greatest benefit a written record is essential. A form specifically drawn up to fit conditions of the individual plant will facilitate the inspection, and help make sure that no part of the system is overlooked. It will also assist the inspector in making comments and bringing recommendations to the attention of those responsible.

In addition to fire equipment, routine inspections should be made of electrical equipment, machinery and processing equipment, and housekeeping conditions, at regular intervals.

With a conscientious and diligent approach to plant inspections, genuine employee interest in fire safety can easily be developed, which will pay rich dividends.

— From page 238

solutions, because they corrode more easily than with plain water. In recharging, all parts including the hose and nozzle should be thoroughly flushed with plain water. Be sure that all the plain water is drained off to prevent freezing and clogging. Because this type of extinguisher does corrode easily, it would probably be wise to purchase one with a copper body in preference to one made of steel.

Gas Cartridge Water Type

The gas cartridge actuated water type is another kind of unit employing plain water or a water and anti-freeze solution as the extinguishing agent. The most common size is the 2½ gal. unit which weighs about 35 lbs. fully charged. This extinguisher is normally carried by a ring type handle which is formed as part of the cap. Inside the shell, just below the cap, is a small metal cylinder which contains carbon dioxide gas, under high pressure. This arrangement is so designed that in order to release the gas, which provides ample pressure to expel the water, the operator must first invert the extinguisher and then bump it gently on the floor holding the extinguisher by the handle built into the bottom of the shell. There is a slightly different model of this same type of extinguisher which normally does not have to be bumped, when inverted for operation, because the weight of the gas cartridge causes it to fall against the puncturing device.

Gas cartridge extinguishers should only be used on Class A fires and can be protected against freezing with a calcium chloride anti-freeze solution. Effective range is from 30 to 40 ft. horizontally and once the unit is put into operation it will continue to discharge for approximately one minute. The fire fighting characteristics are the same as for the pump tank except that this unit can be carried by the bottom handle while it is in operation.

Maintenance is relatively simple since after the extinguisher has been used one need only fill it with water or anti-freeze solution to the filling mark, install a new cartridge in the cage, check the rubber gasket, and screw on the cap, hand tight. Calcium chloride anti-freeze solutions should not be used on stainless steel units since they cause rapid corrosion. Charging the unit above the filling mark is dangerous because it may cause bursting of the shell since the necessary volume for gas expansion above the liquid level will not be sufficiently large.

Annual maintenance should include careful inspection of the shell for excessive corrosion or physical weakness, proper liquid level, defects in the rubber gasket, clogging or damage to the hose or nozzle, bent discharge elbow, and an accurate weighing of the gas cartridge. The total weight of the fully charged gas cartridge is stamped

— To page 244



During our periodic fire drills at Gillette, a Gamewell fire alarm system has proved itself much faster, much more trouble-free than the one it replaced. We appreciate the excellent protective value of the Gamewell system and your aid in engineering it to cover all buildings in our plant area.

Howard P. Spaulding
Chief Electrical Engineer
Gillette Safety Razor Co.
Gillette Park, Boston, Mass.

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. . . industrial leader installs the leading fire protection system

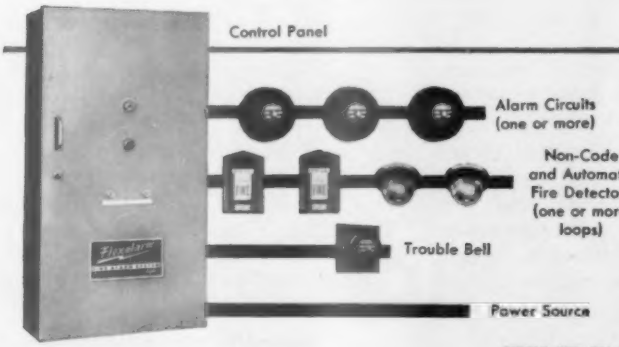
The Gamewell system endorsed by Engineer Howard Spaulding was carefully designed to protect all lives and property in Gillette's 11 buildings — headquarters of the internationally known manufacturer of razors, blades and other products.

A Gamewell system can be engineered to safeguard your own business from fire losses — including not only irreplaceable human lives but buildings and equipment that can't be renewed at their original costs. It will warn all personnel, signal your local fire department and, if required, will include fire detection units that activate the entire system — instantly — automatically.

Ask your Consulting Engineer about these advantages. Also, a Gamewell Fire Protection Engineer will be glad to give you details about installation requirements, performance and price. Send the coupon below for this service and/or a Gamewell technical manual — without obligation.

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CIRCLE 183 ON READER CARD

CIRCLE 200 ON READER CARD

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Damage Control

Planning keeps damage to a minimum

WE HAVE STATED that the best way to prevent fires is before they start; so it follows with damage control. By making the necessary plans and preparations beforehand, substantial savings can be realized in the event of emergency. A damage control program usually is considered in three phases—before the fire, during the fire, and after the fire.

Although preparations made before an emergency may seem relatively minor and unessential, they are important in keeping losses to a minimum. By palletizing, skidding, or raising stock off the floor, water damage can be reduced. It is also advisable to provide water-proof covers, for protection against water from hose lines or sprinklers, and any special equipment needed for diverting water in conjunction with adequate drainage facilities.

An organized and well trained salvage team, in addition to personnel assigned to fire fighting, will be an asset in the time of an emergency. When fire breaks out there are many important tasks which the damage control group can expedite.

1. Fire doors should be closed.
2. All windows in the surrounding area should be closed.
3. All fans, conveyors, blowers, fuel and product lines, which are directly connected with or in close proximity to the fire area, should be shut off.
4. High voltage circuits in or directly adjacent to the fire area should be isolated.
5. Wherever possible, special or valuable stock should be removed.
6. Excessive quantities of water used in fire fighting should be curbed or diverted.
7. Wherever possible important equipment or stock should be covered with waterproof tarpaulins.

As soon as the immediate danger from the fire is over, production facilities should be put back into operation and fire protection equipment properly restored to service. The clean-up job may be left entirely to the damage control or salvage team, but in the event of extensive damage other employees are frequently called upon for assistance.



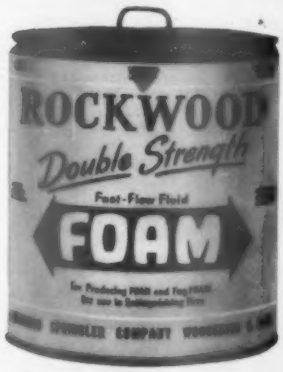
Fire doors should be closed if fire breaks out.

If the roof has been badly damaged or windows broken it is important to secure equipment and stock against the weather. Openings should be boarded up and equipment or stock covered with waterproof tarpaulins. All equipment and machinery should be carefully examined for obvious and hidden damage. Debris should be disposed of as soon as possible, but it is important to carefully sift through the rubble for any salvagable material. There may be thousands of dollars worth of small parts or equipment which could be sorted out, cleaned, and used.

If you have organized an effective disaster control program in advance, recovery will be less difficult, and probably far more efficient. Even though very few of the plants which have sustained disasters have had planned recovery programs, many of them showed a remarkable spontaneous ability to cope with the problems. Nevertheless, the majority of industrialists who have experienced a disaster agree that pre-emergency planning would have saved time, money, and considerable wasted effort.

99.7%

of Rockwood FOAM protection is FREE!



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Engineers Water . . . to Cut Fire Losses

FOR FIRE FIGHTING purposes Rockwood Double Strength FOAM is inexpensive and completely effective. 3 parts *Rockwood Foam Liquid, plus 97 parts free water, plus 900 parts free air give you a fast low-cost fire extinguishing agent for only 1½ cents a gallon!*

Rockwood Double Strength FOAM puts out fires fast . . . reduces your storage costs . . . reduces shipping costs too! If you're using other types of special hazard fire extinguishing agents — you may not be using the most economical or most effective agent! We'll show you how to save on training cost and on fire fighting costs — and to fight fires better! Send in the coupon below. Tested and listed by Underwriters' Laboratories, Inc. Distributors in all principal cities.

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Please send me complete information on Rockwood fire-fighting products.

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Company.....
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CIRCLE 184 ON READER CARD

Early Detection

— *From page 240*

near the top of the cylinder. The cartridge must be replaced if it has lost ½ oz. or more. In the model which does not require bumping to release the gas from the cartridge the metal cage should be checked to see that the cartridge is free to slide when it is inverted. Gas cartridge extinguishers must be hydrostatically tested every five years in accordance with the manufacturer's recommended test pressure.

Soda Acid Extinguisher

The appearance of the soda acid extinguisher is similar to that of the gas cartridge type. It is commonly available in the 2½ gal. size, weighing about 35 lbs. fully charged, and should be used on Class A fires only. The effective range is about 30 to 40 ft. horizontally with a discharge time of approximately one minute. When this unit is located outdoors or in unheated sections of buildings, subject to temperatures below minus 40 F, it must be installed in a heated cabinet.



Painted stripe on column marks extinguisher location.

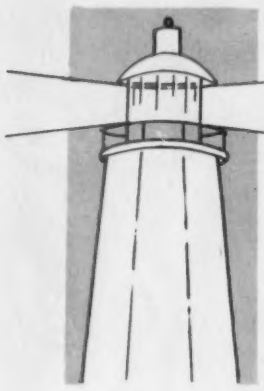
As its name implies, this extinguisher contains two chemicals (about 2½ gal. of a sodium bicarbonate and water solution and 4 oz. of 66° baume sulfuric acid) which mix together upon inverting the extinguisher to create sufficient carbon dioxide gas pressure to discharge its contents.

The fire fighting characteristics of the soda acid extinguisher are the same as for the gas cartridge type. Maintenance requires periodic external inspections and *yearly* discharge and recharge operations. Close examination should be made of the metal shell for mechanical injury, corrosion, and damage by accidental freezing. The hose and nozzle should be checked for obstructions and defects caused by age or mechanical injury. The loose fitting lead stopple must be in place on the bottle to reduce the hydroscopic action of the sulfuric acid. The metal shell, hose, and nozzle should be thoroughly washed out before recharging. The sodium bicarbonate and water solution should be well mixed in a separate, clean container and strained when poured into the extinguisher, in order to remove any particles which may clog the hose or nozzle.

Soda acid extinguishers must be hydrostatically tested every 5 years in accordance with the manufacturer's recommended test pressure.

Stored Pressure Water Type

The stored pressure water extinguisher is a relatively new type and because of its many advantages is replacing some of the other water type units. It is available in a 2½ gal. size, which weighs about 40 lbs. fully charged, and has an effective range of approximately 35 to 40 ft. horizontally. The extinguisher can be intermittently operated and has



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FEDERAL 360 degree Beacon Rays identify danger spots, moving vehicles or emergency situations.

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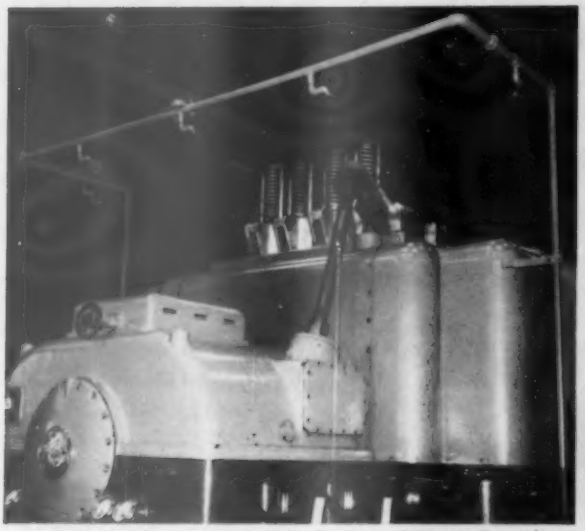


#271 BEACON RAY LIGHT

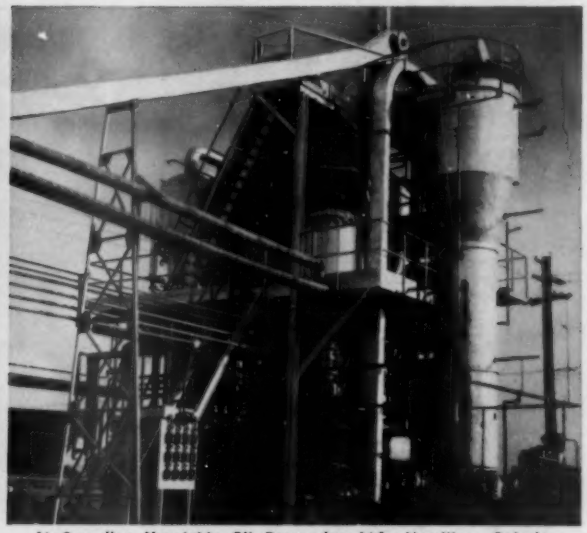
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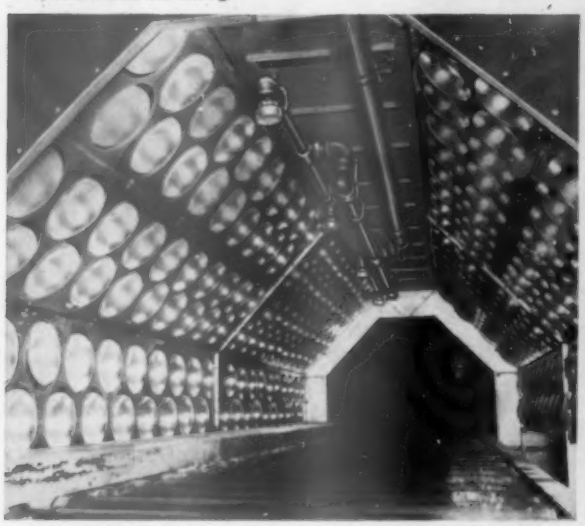
CIRCLE 185 ON READER CARD



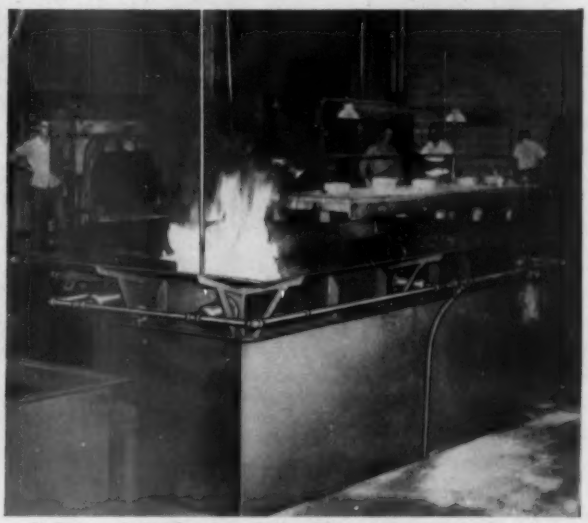
At Pennsylvania Power and Light Company, Sunbury, Pa., this steam generator is protected by an automatic Grinnell Protecto-Spray system in the event of outside fires and by a Dry Chemical system inside the casing.



At Canadian Vegetable Oil Processing Ltd., Hamilton, Ontario, Grinnell ProtectoSpray safeguards upper structure of this hexane solvent extraction unit, while a ProtectoFoam system guards the lower section.



At the RCAF supply depot at Namao, Alberta, this infrared drying oven is protected by a Dry Chemical system engineered by Grinnell to protect against possible fire resulting from ignition of flammable vapor mixtures.



At Dresser Industries, Inc., Dallas, Texas, hot metal temporarily ignites resulting vapors as metal is being submerged. If fire should get out of control, a Grinnell-installed Carbon Dioxide system is on guard to extinguish it quickly.

You can rely on Grinnell for the right protection against destruction by fire!

Grinnell has had 90 years experience in devising fire protection systems for all kinds of fire hazards — systems which can be relied on to protect the continuity of your business and to safeguard your dollar investment. Grinnell offers you quality-controlled manufacturing, layouts by experienced engineers, and installations by skilled crews. Let Grinnell engineers help you select the right system.

16 mm. Sound-Color Film—Get up to date on fire with Grinnell's 35-minute film — "Fire Protection Through Research." Both typical and unusual fire hazards are described and demonstrated. To borrow this film, without charge, write — Grinnell Company, Providence 1, Rhode Island.

GRINNELL

FIRE PROTECTION SYSTEMS SINCE 1870

CIRCLE 186 ON READER CARD

Out with the Smoke In with the Crew

Case Study J-652*

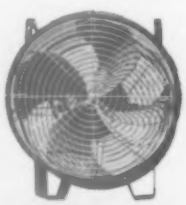


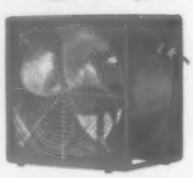
And down goes the damage with a Super Vac Smoke Ejector

The weather was freezing cold* the afternoon of January 24th when a Pennsylvania fire squad answered the call of a sporting goods store fire. The stockroom had been ablaze three hours before discovery. Attack was made initially from front and rear of store *but was impossible even with masks*, so dense was the smoke. A Super Vac Smoke Ejector, in use with the B . . . Fire Company only one month, was put into immediate operation. Alarms were sent in for additional Smoke Ejectors. The super vacuum effect of the propeller blades sucked out the smoke, permitting the fire squad to *see and fight the fire.*

Chief John H. . . said later: "Without the use of Smoke Ejectors, this fire would have taken longer to control."

**Write for your copy of the complete report of this actual fire from the Super Vac files. Ask for all-new literature on new models, new housing, improved blade performance.*





BOTH ROUND AND SQUARE HOUSING NOW AVAILABLE

All Smoke Ejectors are now shipped with the "Plus 21" 4-bladed propeller, redesigned to increase air volume by 21%. Specify either round housing, or the new square housing (no increase in housing price). Super Vac accessories include: running board mounts, hangers, flexible duct and adapter rings. See your Super Vac dealer or write to factory.

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CIRCLE 187 ON READER CARD

a discharge time of about one minute under continuous operation. Although the fire-fighting characteristics are the same as for other water types, which make it acceptable for Class A fires only, the operating features are much simpler.

The extinguisher is normally carried by a combination handle and operating lever attached to the discharge valve. Pulling the locking ring pin and squeezing the combination handle operates the extinguisher. This type of extinguisher can be carried while in operation and can be stopped at any time by releasing the operating lever.

This extinguisher is pressurized with air or an inert gas through a hose line equipped with an automobile type air chuck. Charging pressures vary according to manufacturer, from 90 to 150 lbs. p.s.i. One model is designed to be pressurized through the discharge hose. This may be somewhat awkward for one man to do since he must hold the air chuck on the hoze nozzle and squeeze the operating lever at the same time. Rigidly mounting the air chuck or using a locking type air chuck will overcome this problem. On other units the air chuck is simply applied to a valve stem located on the body of the discharge valve, eliminating the necessity for squeezing the discharge lever.

An air pressure gauge is also mounted on the valve body and will indicate the air pressure inside the unit at all times. When charging the extinguisher, the water level should be only to the fill mark, so that there will be sufficient room for the pressurized air. Some manufacturers have designed an over-fill tube as part of the water chamber, which will ensure filling to the proper level. When pressurizing the unit, the gauge should indicate just above the full mark or green line before removing the air chuck, so that when the pressure equalizes it will not read less than full. After charging the extinguisher it should stand for about 24 hours to check for leaks before putting it back into service.

Maintenance is relatively simple since the pressure gauge will indicate at all times if the extinguisher is fully charged. Checking the pressure gauge, hose, and nozzle at frequent intervals is all that is necessary. If subject to freezing temperatures this

extinguisher must be protected with an anti-freeze charge, but be sure that the extinguisher is of a corrosion-resistant type able to withstand the action of the chemicals. Stainless steel units should not be filled with calcium chloride anti-freeze charges. Hydrostatic testing is also required every five years in accordance with the manufacturer's recommended test pressure.

One important feature to consider on purchasing this type of unit is that the manufacturer has allowed sufficient clearance between the operating lever and the carrying handle so that the operator does not pinch the palm of his hand when squeezing the lever.

Loaded Stream

The loaded stream extinguisher is available in two models, the gas cartridge type and the stored pressure type. These two models are exactly the same as the water type units except that a special alkali-metal-salt solution is used instead of the water or anti-freeze solution. The chemicals used in the loaded stream charge incorporate an anti-freeze property and because they are very corrosive should be used only in units made of corrosive-resistant metals.

The Underwriters' Laboratories rate this extinguisher as effective on Class A and Class B fires. The fire-fighting characteristics for Class A fires are very similar to the other water type extinguishers. Since the rating for Class B fires is very low, its effectivenesss is limited to extremely small fires and then only if used in a special manner. There are several other fire-fighting agents more suitable for Class B fires, so it would be best not to depend a great deal on this rating.

One technique which may be used with any of the water type extinguishers is deflecting the discharge stream into a spray. This can easily be done by extending the tip of the finger over the edge of the nozzle into the discharge stream. Depending on the nature of the fire this method of application may be more effective even though the range is greatly reduced.

Foam Extinguisher

The foam extinguisher, which resembles soda-acid and gas cartridge extinguishers in appearance, incorporates the principle of blanketing

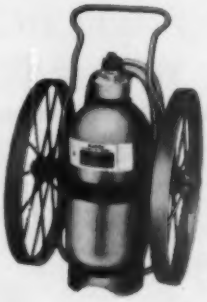
NOW! GET FULL-POWER FIRE FIGHTING WITH KIDDE'S DRY CHEMICAL LINE!



2½ and 5 pound pressurized units! Granted top rating by U.L., these two units pack the extra punch needed to get the jump on fire. For example, the 2½ pound Kidde unit is as compact as a 1 quart carbon tet model, yet is eight times as powerful! Both the 2½ and 5 feature simple, two-step operation, easy-to-read dust-and-moisture-proof gauges. 10 pound dry chemical also available.



20 and 30 pound pressurized dry chemicals! Both these Kidde units have the same good features of the 2½ and 5, plus some "extras" all their own. Center balanced for fast action, rugged diffuser horn, speedy trigger operation, recessed pressure gauge and enclosed mechanism.



200 pound dry chemical wheeled unit! Kidde's 200 pounder discharges a 40-foot stream faster, has an *extra* 50 pounds of fire-smothering dry chemical to knock down fire quicker. Low center of gravity and wide wheels make it easy to maneuver. Easy-to-use discharge control makes operation simple.



400 pound stationary unit! Here's maximum protection in a minimum package! Like all Kidde units, this features sure, dependable performance and fast, easy operation. Either wall-mounted or free standing, leakproof and tamperproof, exclusive Bridgeman Seal, universal long-range nozzle, easy-to-read pressure gauge. 200 pound model also available.

Get the jump on oil, gas and electrical fires! Learn more about the complete line of dependable, efficient Kidde equipment—write today!

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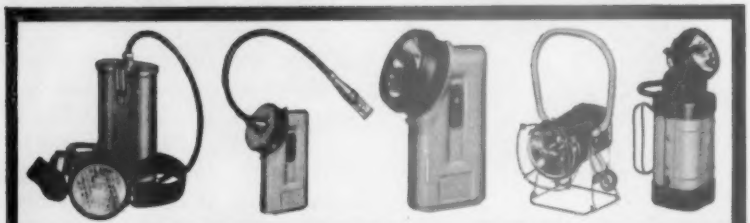
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A complete 16-page, illustrated, descriptive Catalog, including a comprehensive table of operating data on dry batteries and lamps.

The hazards of fire and explosion are two of the greatest dangers to plant safety. For more than 50 years, JUSTRITE has specialized in the development and manufacture of portable safety lights that meet the most rigid safety requirements and are easy to handle, resulting in employee approval. Why not standardize on the safety equipment that has been proved in thousands of situations? It's no wonder that safety engineers say "JUSTRITE is all right!"

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or smothering the fire by excluding oxygen, as well as the quenching and cooling effect common to water. It is therefore suitable for both Class A and Class B fires, except for solvents which are immiscible with water. It is approximately six times more effective on Class B fires than the loaded stream extinguisher.

Foam extinguishers are available in a number of sizes. Most common is the 2½ gal. unit, weighing about 35 lbs. fully charged. The discharge time is approximately one minute with an effective range of about 30 to 40 ft. An inner container, filled to the proper level with a water solution of aluminum sulphate and covered with a lead stopple, is held firmly in place by a rubber gasket and ring-top cap. A water solution of sodium bicarbonate fills the outer or large container. When the extinguisher is inverted for operation, the lead stopple will drop, permitting the two solutions to mix and produce approximately 20 gal. of chemical foam. Carbon dioxide gas is released in this chemical reaction, producing sufficient pressure in the extinguisher to expel the foam.

For liquid fires in open containers the operator should direct the stream against the back inside wall of the container, just above the burning surface. If this is not possible, move back so that the foam stream will fall lightly on the fire. In either case, if possible, the operator should walk around the fire in order to obtain maximum coverage during the discharge period. The foam stream should never be discharged directly into the burning liquid because this may cause the fire to spread out of the container. On Class B spill fires, stand back, and allow the foam to fall on the burning area with as little force as possible. For Class A fires, the foam stream may be used directly against the source of the flames.

Maintenance is similar to the soda-acid extinguisher but more complicated. Each chemical should be put into solution by mixing it with luke-warm water in a separate, clean container and then straining it into the respective chamber of the extinguisher, so that foreign or undissolved particles will not clog the hose and nozzle. If the chemicals are not mixed very carefully, the foam may be either too watery or too stiff.

It is important to use only the chemical charges recommended by the manufacturer.

After the extinguisher is discharged, the inner container and stopple should be thoroughly cleaned and the interior of the extinguisher should be carefully washed out. Check the outlet screen to be sure it is not plugged and flush out the hose and nozzle with water.

The foam extinguisher can only be protected from freezing by keeping it in a heated cabinet and it must not be kept in areas which exceed 120 F. Maintenance requires periodic external inspections and *yearly* discharge and recharge.

One important feature in maintaining foam extinguishers as well as the soda acid and gas cartridge units is to insure that the pressure relief hole in the cap is not plugged and that the cap is screwed on hand tight. A simple device can be made for removing caps that are stuck, by mounting two short pieces of angle iron on a board so that the bottom handle can be firmly held between them while applying pressure on the cap.

Because of maintenance problems and the characteristics of the extinguishing agent, many companies have preferred to use other types of extinguishers which provide Class B protection.

Foam extinguishers must be hydrostatically tested every 5 years in accordance with the manufacturer's recommended test pressures.

The first seven types of extinguishers all employ the use of water and therefore should *never* be used on Class C fires where there is a possibility that the operator may receive a shock from energized electrical equipment.

Carbon Dioxide

In principle and operation the carbon dioxide extinguisher is probably the simplest type unit. They range in size from 2 to 25 lbs. and have an effective range of 3 to 8 ft. Since the carbon dioxide, when it is discharged, is primarily in the form of a gas, the fire fighting effectiveness is generally reduced under windy conditions. The fire extinguishing action of carbon dioxide is due to the excluding or diluting of oxygen, which creates a smothering action on the fire. Some cooling effect may result but this is considered

— *To page 250*

Special Purpose Extinguishers

An "all purpose" unit is now available

A completely new type of fire extinguisher is now available which is rated for A, B, and C Class fires. They are made in sizes from 5 to 30 lbs. with only the larger units rated for Class A fires. Because of differences in design and extinguishing agents, ratings vary somewhat between manufacturers. The effective range of the larger model is 12 to 15 ft. In general, the extinguisher resembles the stored pressure dry chemical type in appearance, physical features and method of operation. Temperatures where the units are installed or stored should be between minus 40 F and 120 F.

Upon discharge, the extinguishing agent will break down, when in contact with fire, to form a coating which blankets and smothers the fire. Some units are also rated for magnesium fires. Tests have determined that about 4 lbs. of chemical are needed to extinguish each pound of magnesium. One very important item to note is that this extinguisher has a high flow rate necessary for A, B and C Class fires. If improperly used on a magnesium chip fire, the burning chips can be scattered over a wide area, causing an extremely dangerous situation. The operator *must* be thoroughly trained and cool-headed so that the discharge valve will only be opened part way, thereby "metering" the flow of the chemical.

This type of extinguisher should *not* be considered revolutionary, making other types obsolete, but instead a special purpose unit suitable, under certain conditions, for protecting multiple class hazards. The cost of the extinguishing agent is more than twice as much as dry chemical and of course cannot be compared with water, consequently the factor of economics will be an important consideration in protecting the majority of occupancies.

Pyrophoric Metal Hazards

The use of combustible metals has increased until protection is now needed for: sodium, titanium, uranium, zirconium, lithium, magnesium, sodium-potassium alloys (NaK) and other less common materials. There are several powdered agents approved for use on metal fires, the oldest being the G-1 type, which is a graphite-phosphorus compound. When it is applied to a metal fire, the phosphorus material generates vapors which blanket and smother the flames, while the graphite, being a good conductor of heat cools the metal below its ignition temperature.

Another material is Met-L-X, composed of a sodium chloride base with additives to make it free flowing, increase water repellency, and create the property of heat caking. This material is dispensed from a dry powder extinguisher which is similar in appearance and physical features to the dry chemical extinguisher.

As previously mentioned the all purpose chemical extinguisher is approved for use on magnesium fires only, in so far as burning metals are concerned.

The extinguishing effects of dry powder agents on a given metal depend on the physical form and quantity of the metal involved and on ambient conditions. Although dry powders are very effective on combustible metal fires, they all have certain limitations. The type, quantity, and form of the metal and the existing physical conditions must be considered when selecting the proper type of dry powder and the method of application.

Pyrophoric Liquid Hazards

A problem recently developed in fire fighting involves pyrophoric liquids, such as triethyl-aluminum. These liquids ignite spontaneously and the resulting fires cannot be easily extinguished by dry powder or other commonly used agents. A special material has been developed, consisting of a bicarbonate base dry chemical and an activated absorbent.

The principle of extinguishment involves the combination effect of dry chemical, which extinguishes the flames, and the absorbent which absorbs the remaining fuel and prevents re-ignition. This extinguishing agent has been designed so that it can be discharged from an extinguisher similar to the standard dry chemical model.

to be of minor importance.

Carbon dioxide extinguishers are very effective on Class B and Class C fires and may be used to extinguish very small Class A fires or control them until an approved extinguisher for Class A fires can be obtained.

This extinguisher consists of a heavy metal cylinder, which contains the carbon dioxide in a fluid state, a siphon tube, a valve assembly with carrying handle and operating lever, and a discharge horn or hose and horn combination. To operate, hold in an upright position, pull the locking ring pin and squeeze the operating lever. On all fires the discharge should be directed at the base of the flames and should be applied to the burning area even after the fire has gone out. This will minimize the possibility of a reflash.

On flammable liquid fires, best results are obtained when the carbon dioxide is applied in a slow sweeping action, from side to side, starting at the near edge of the fire and working toward the back of the burning area. Carbon dioxide extinguishers are designed so that they can easily be operated while being carried.

Maintenance is very simple since the recharging is generally done by an outside agency. If recharging at the plant site is desirable, the manufacturer's representative of the extinguisher should be contacted for assistance in setting up an approved recharge station. At regular intervals the extinguisher should be checked by weighing to determine if it needs to be recharged and should also be inspected for any visible defects. The total full weight is stamped on the body of the valve and the extinguisher should be recharged if its net weight is less than 90 per cent of the total full weight. Protection against freezing is unnecessary but installations should not be made in any area which exceeds 120 F. It is advisable to have a hydrostatic testing every 5 years in accordance with the manufacturer's recommended test pressure.

If carbon dioxide extinguishers are used in confined spaces care should be taken against being overcome by oxygen deficiency.

The discharge horn can become extremely cold when the extinguisher is being used, and contact with it should be avoided.

Dry Chemical Cartridge Operated

The dry chemical extinguisher is one of the most versatile units available. It is an excellent extinguisher for Class B and Class C fires and is very effective in extinguishing or controlling small Class A fires. The gas cartridge units are available in sizes from 5 to 30 lbs. and have an effective range of about 10 to 25 ft. The physical characteristics may vary according to manufacturer but the basic principle is the same. The essential features consist of a large chamber, which contains the dry chemical extinguishing agent, made of specially treated sodium bicarbonate, and a small cylinder of carbon dioxide, used primarily as a propellant for the dry chemical. The small gas cylinder has a left-hand thread and is turned to the right for removal. The dry chemical material is specially treated to resist caking, caused by moisture absorption, and



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only the powder and carbon dioxide cartridges recommended by the manufacturer should be used.

To put the extinguisher into operation, support it in an upright position, pull the locking ring pin and push the charging lever down. This will release the gas from the carbon dioxide cylinder and pressurize the large chamber containing the dry chemical. The discharge of the dry chemical is controlled by a shut-off nozzle on the end of the hose. Some extinguishers have a relatively high-velocity nozzle and care should be taken not to direct the initial discharge directly into the burning area since it may cause the fire to spread. Recent tests have indicated that the smothering or cooling effects, common to other types of extinguishers, is considered to be of relatively minor importance in the performance of dry chemical extinguishers. Dry chemical is believed to extinguish primarily by interrupting the chemical flame chain reaction. The cloud of dry chemical material acts something like a flame arrestor screen through which the flame cannot pass.

Particle size is very critical because the smaller the size for a given weight the more surface is available to capture the free radicals. For years, we have been taught that three things are needed to support fire—oxygen, heat and fuel. Now it seems that the fire triangle should really be a fire square with the flame chain reaction principle as the fourth side. Therefore, for best results use a "fanning" action by rapidly moving the wrist from side to side, so that the powder cloud can thoroughly intermix with the flames. The discharge should be applied to the burning area after the fire has gone out in order to minimize the possibility of reflash. This type of extinguisher is designed so it can be operated while being carried. Although the operator can use the extinguisher intermittently it will lose its pressure several hours after initial use.

Once the unit has been pressurized there is a possibility that the dry chemical material may become packed in the discharge hose, if allowed to stand for a considerable amount of time. To insure against this, when the fire is out and the extinguisher is no longer needed, invert it and squeeze the nozzle valve which will release the remaining carbon dioxide gas and blow the hose clean. When an extinguisher with a blocked hose is pressurized no dry chemical will be discharged when the nozzle valve is open. However if the nozzle valve is held open for five or ten seconds the pressure will frequently work up the hose and free the packed dry chemical so that the extinguisher will then operate normally.

Maintenance is relatively simple, requiring at least semi-annual weighing of the carbon dioxide cartridge to make sure that it hasn't lost more than ½ oz. from the weight marked on the side of the cartridge. Yearly inspection should include: checking the dry chemical material for caking and proper level; accurate weighing of the carbon dioxide cartridge; carefully checking the cap gasket to see that it is in good condition and securely in place; inspecting the hose,

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nozzle, and siphon tube for any obstructions; and examining the unit for any external physical damage or corrosion. *Never* wash out any part of the extinguisher with water or any other liquid.

Since dry chemical extinguishers do not need to be protected from freezing they can be located where best suited. For extreme temperatures (below minus 40 F and above 120 F) special models are available.

Dry Chemical Stored Pressure

A fairly recent addition to the dry chemical extinguisher line is the dry chemical stored pressure fire extinguisher, available in sizes from 2½ to 30 lbs. The fire fighting characteristics are identical to the cartridge operated units and differ only in their physical features. The design incorporates one large container for both the pressurizing gas and the dry chemical material, which are intermixed at all times, a siphon tube, a valve assembly, and a discharge nozzle or hose and nozzle combination. There are two basic styles, one that has a combination handle and operating lever on the valve assembly and the other which has a release lever on the cap of the extinguisher and a shut-off nozzle on the end of the discharge hose.

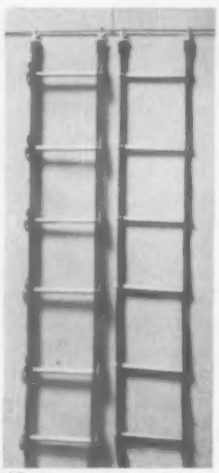
The operating features of units with the combination handle and operating lever are basically the same as for the carbon dioxide extinguishers. In maintaining this type of stored pressure extinguisher, the entire valve assembly must be thoroughly cleaned when recharging, to insure against pressure loss. The main disadvantage with this unit is pressure loss even though it is carefully recharged. Since the methods for pressurizing may vary according to manufacturer, it is essential to follow their recharging instructions very carefully.

One manufacturer's stored pressure model has operational features similar to the cartridge type. It has a release lever and locking ring pin on the cap assembly and a shut off nozzle on the hose. Although this type of stored pressure extinguisher also requires special attention in recharging, it is comparatively simple.

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The cap assembly is removed by turning the retaining ring counterclockwise until the arrow in the notched recess is in line with the locking device on the release lever. The release lever should now return to its normal position, thereby allowing the cap assembly to be removed.

The ring gasket should then be removed from the cap, carefully cleaned and coated with a light film of silicon grease. Clean out any dry chemical in the cap before replacing the ring gasket and wipe off the siphon tube gasket. Thoroughly clean the ring gasket seat before putting the cap assembly back on the extinguisher. To pressurize the unit remove the hose and install a special adapter in the discharge orifice for connecting the pressurizing equipment.

Nitrogen gas, which is commonly used for pressurizing, should be of the commercial dry type so that it is free from moisture. Carbon dioxide is also recommended by some manufacturers. Pressurized air is generally considered unsatisfactory since it usually contains moisture even though it is passed through a moisture trap. It is always essential to keep moisture away from the dry chemical material in order to prevent caking.

The cap or valve assembly also contains a pressure gauge which will indicate the internal pressure at all times. Periodic inspection should be made to check the pressure, to see if the extinguisher is fully charged, and to look for any physical damage or corrosion.

It is advisable to have a hydrostatic testing every 5 years, in accordance with the manufacturer's recommended test pressure.

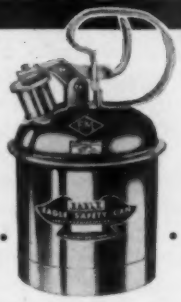
Vaporizing Liquid Extinguisher

Vaporizing liquid extinguishers are available in a number of sizes and styles and are designed for use on Class B and C fires. The pump type is available in 1 to 2½ qt. sizes and the stored pressure units from 1 qt. to 3½ gal. This type of extinguisher is being rapidly replaced by many companies with more suitable types.

The most common agent used in this type extinguisher is carbon tetrachloride, which is extremely toxic when vaporized. One teasponful of carbon tetrachloride vaporized in a 20 x 10 x 8 ft. room will produce

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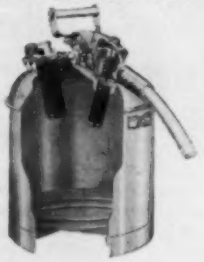


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an atmosphere containing 25 parts per million, which is the maximum allowable concentration as established by the American Conference of Governmental Hygienists. And, it would take more than three teaspoonfuls before we would be able to detect its odor. When used on a fire this chemical breaks down into several other gases, including phosgene in some cases, which are all more toxic in nature. It would only take about two oz. (13 teaspoons) of carbon tetrachloride applied to a fire in the same size room, poorly ventilated, to produce a lethal atmosphere of decomposed gases. Several chemicals have been substituted for carbon tetrachloride, but they all have the same general characteristics of toxicity. These hazards are outlined in N.F.P.A. Standard No. 182-M. Because of the hazards involved with this type of extinguisher, many companies and states as well as the U. S. Coast Guard have banned their use. During recent years, a large number of "beer can" type extinguishers have appeared on the market. The majority of these units contain carbon tetrachloride or other highly toxic chemicals. None of these units are approved by Underwriters' Laboratories.

Recently an extinguisher has been developed which uses monobromotrifluoromethane as the vaporizing liquid agent. This material has a high vapor pressure at normal temperatures, which accounts for most of its propellent force. Some nitrogen is also added in pressurizing to improve its operational characteristics. In fact, the physical properties of this compound are such that it could be more correctly described as a liquefied compressed gas rather than a vaporizing liquid. The extinguisher resembles the carbon dioxide type in appearance, method of operation its extinguishing effect.

It is anticipated that this type of extinguisher will be approved by Underwriters Laboratories in the spring of 1961 and should compare favorably pound per pound with dry chemical or carbon dioxide. Recent tests indicate that this material, commonly referred to as Halon 1301, does not easily break down when applied to a fire, and should be similar to the carbon dioxide type with respect to safety. At present the cost of Halon 1301 is about 20 times that of dry chemical.

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Model G



Model H

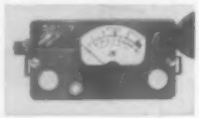


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Fire Protection Engineering

We know how the fires start, and we know how to keep them from starting, so what are we waiting for?

NEXT TO PROTECTING against the loss of life or personal injuries by fire, the prevention of fire through sound engineering principles is paramount. Every measure for the prevention of fire reduces the probability of personal injuries or loss of life, and every measure for its prompt extinguishment or control likewise contributes to life safety.

The fundamental principles of fire prevention are simple and easily understood, but their application has become a specialized engineering science. A qualified engineer, whether connected with the plant, a consulting firm or an insurance company, will be helpful in planning and securing the best preventive and protective measures.

To eliminate causes of fire it is, of course, important to know the many ways in which fire can start, with specific consideration to the most common. A study made by the Associated Factory Mutual Fire Insurance Companies of almost 20,000 industrial fires over a seven year period, indicates that the majority of fires can be traced to four general causes.

Electrical. Usually traced to arcing, short circuits, or over-heated electrical equipment. Preventive maintenance and proper installation and use of equipment are essential preventive measures.

Friction. Inadequate lubrication, misaligned or broken equipment, jamming of material, belt drives and cutting or grinding operations are all possible heat sources.

Foreign Substances. Metallic objects mixed with combustible materials frequently create sparks during routine machine processing.

Open Flames. Cutting and welding operations, stoves, furnaces, and torches are most commonly involved.

Armed with the knowledge of how fires start, effective preventive measures can be taken. Building construction and design should be of a fire-resistant type and occupied only in conformance with occupancy standards. Plants should be subdivided into fire areas by fire walls; yard spaces with as much segregation of hazardous processes as possible.

Of particular importance is the modernization of equipment and buildings and the construction of new facilities. All too frequently consideration is not given in maintaining the highest possible standards in fire prevention. The plant management and qualified fire protection engineers must work together in order to secure the maximum in fire protection.

Regardless of the extent of the preventive measures taken, it is essential to provide the protection offered by detecting and extinguishing equipment.

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SECTION 10

NUCLEAR RADIATION

IN SECTION 10:

Key Layman Training to Radiation Safety
Edwin L. Alpaugh 258

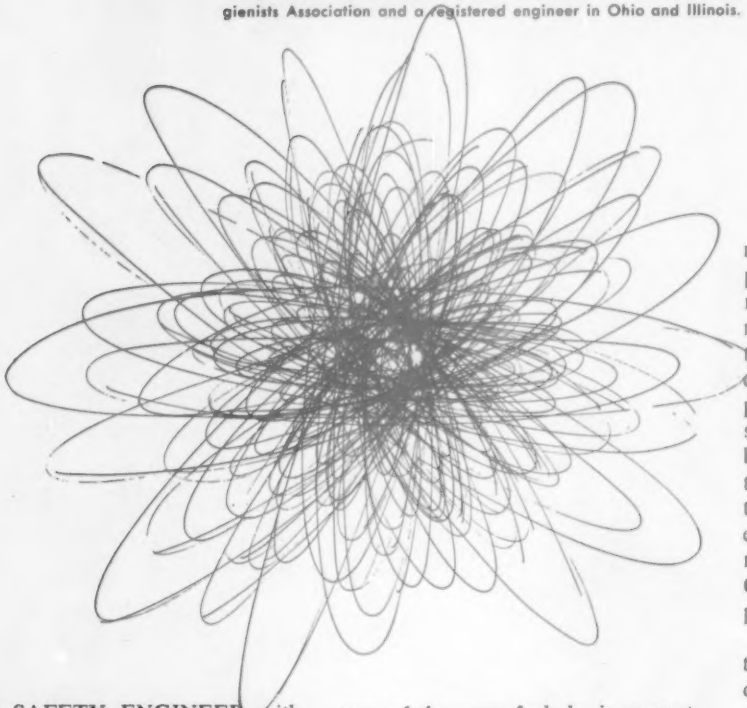
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Key Layman Training To Radiation Safety

By EDWIN L. ALPAUGH



Edwin L. Alpaugh is industrial hygienist, International Harvester, Chicago. A graduate of the Illinois Institute of Technology with a B.S. degree in chemical engineering, Alpaugh was formerly head of health and safety, Analytical Laboratory Department, National Lead Company of Ohio. He served as industrial hygienist on the National Safety Council staff. He is a member of the American Institute of Chemical Engineers, the American Industrial Hygienists Association and a registered engineer in Ohio and Illinois.



ANY SAFETY ENGINEER with a successful safety program will admit a substantial part of his success lies in getting his message across to plant supervision.

Ordinarily, if a supervisor recognizes and understands a certain hazard, he will cooperate wholeheartedly with the safety engineer to eliminate the problem. In this respect the industrial use of radioactive materials presents a challenge to the man responsible for safety.

Even though he has technical advice available, his safety program will be weakened if lack of knowledge prevents him from discussing these problems with line supervision.

There is no difficulty in convincing people that a knowledge of basic radiation concepts is important. The difficulty lies in agreeing on what constitutes basic concepts.

A physicist discussing the structure of the atom feels he is presenting basic concepts. The safety engineer or foreman listening to the discussion may not be quite sure whether an element is part of an atom or an atom part of an element, and to him the material is technical. By the time the roentgen is defined or the mathematical evaluation of half-life is illustrated, the physicist has reached the apogee in his orbit as far as the listeners are concerned.

There is no question that technical training sessions on ionizing radiation are valuable. To the man with a technical background, they are of great value. To the man who last looked at his high school physics book 15 years ago, they are frustrating.

Note the outlines of various basic radiation courses announced in current news media. They cover such subjects as the nucleus, electrons, nuclear reactions, the spectrum, the photon, X rays and gamma rays, neutrons, the exponential nature of radioactive decay, half-life computations, ionization, Compton encounter, photoelectric encounter, pair production, secondary radiation, scattered radiation, dosimeters, film badges, geiger counters, proportional counters, ion chambers, scintillation counters, absorption coefficients, shielding caluculations, the roentgen, the REM, Atomic Energy Commission regulations, and shipping regulations.

This partial list of subjects is taken from an outline for a three-day course.

It is possible to discuss radiation safety in terms the layman will understand. Occasionally, oversimplification may take slight liberties with scientific facts, but the uninitiated will understand far more than if the material presented is too technical. An excellent example of the kind of information that should be presented to nontechnical people can be found in a booklet by F. L. Brannigan called *Living With Radiation*. It is available for 45 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

One of the most important problems associated with industrial use of radioactive materials involves proper teaching of radiological safety to those without a highly technical background. Failure to provide this kind of training is a detriment to the use of a versatile new tool.

Radiation—and how it grew

Radiation protection equipment developed with the nuclear energy industry—and remains the key to a remarkable safety record

THE DISCOVERY of X rays and radium more than a half century ago inaugurated a new era of technological advance, bringing with it a new kind of hazard to man.

Although in the past decade the use of radiation devices has increased tremendously, the hazards involved in working with these devices are being restrained with progressively more effective controls.

Ignorance of radiation effects that once produced cancer, blood diseases, and cataracts among radiation workers has been replaced by an acute awareness of the dangers.

Today, work in the presence of radiation can be less hazardous than the same type of work in other fields—a result believed due to the influence of radiation safety on the over-all safety program.

Personal Protective Devices

Film Badges. There are numerous devices used to measure a radiation exposure of the individual. Perhaps the most widely used is the film badge.

Film badge services are designed to provide measurement of the exposure to ionizing radiation which personnel receive in working around X-ray equipment, radioactive materials, or any other source of beta, gamma, or X radiation.

Each exposed person is provided a small badge which contains special photographic film emulsions (in a light-tight wrapper) and one or more radiation absorbers shielding part of the film. These badges are worn when exposure to radiation is possible during work. The radiation, if any, will penetrate to the film, leaving a latent image.

Upon development, the latent image will appear as darkening on the film. The amount of darkening is proportional to the amount of radiation which penetrates to the film. The badge absorbers will shield out varying amounts of the radiation resulting in less darkening of that area of the film under the absorbers. The amount less will depend upon the energy and type of radiation. Film areas having no shielding may be compared against areas having absorbers of various types.

By determining the darkening under the various absorbers, the type and energy of the radiation may be estimated. The density values are then compared with those of the film badges exposed to normal amounts of the radiation of the same energy, and an estimate of the exposure value is arrived at.

Badges containing neutron-sensitive film should be issued to employees working around reactors or near neutron-liberating substances.

In general, film badges are processed and read by an outside service company trained and equipped to handle the special problem involved. Such a film badge service offers a distinct aid in employee protection and serves to establish reliable primary records of radiation exposure directly correlated with each individual.

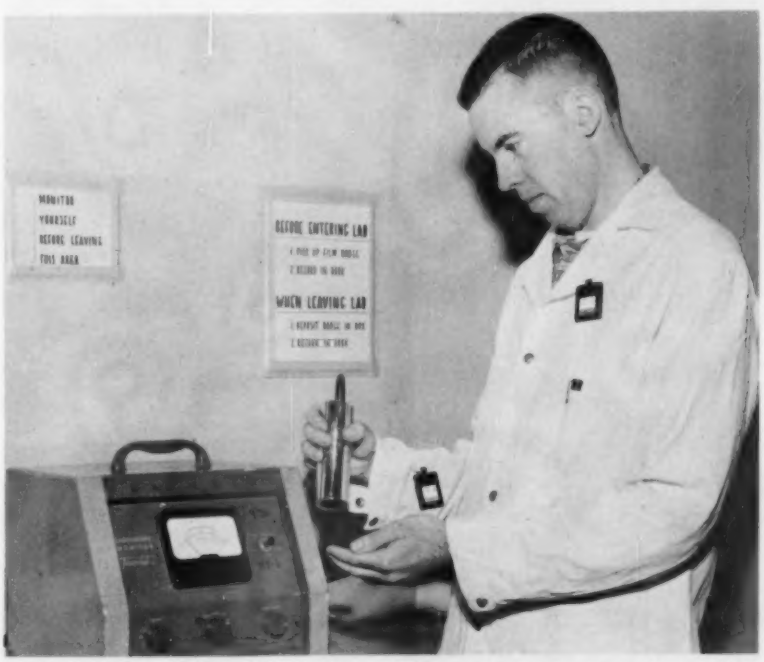
Films are processed either weekly, biweekly, or monthly, and the exposure values for the period are determined and reported.

Film badges are worn on the part of the body expected to receive the greatest exposure to radiation and usually are clipped to the breast pocket of the outer garment.

Badges are available for the wrist or for a finger in situations where the hands come close to the source of radiation exposure, for example, in operations requiring use of hands in exposures considerably in excess of that received by the body as a whole.

Film badges are an economical means of permanently recording the degree of hazard. The information obtained can be used to correct radiation safety deficiencies and provide evidence of diligence in keeping exposures to acceptable levels in the event of litigation over radiation exposures.

Mere subscription to a service is not always sufficient protection. The



A laboratory worker checks his hands with a portable monitor. The sensing probe is pointed at areas which might have been exposed to radioactive contamination. The monitor gives both audible and visual indication of radioactivity. Note film badges on sleeve and lapel.

processor's experience and competence may become points of issue. His methods must include the use of a densitometer and control films exposed to various types of radiation. The actual films, not just the report, must be available as evidence. Some recommend that extensive records of the processing conditions be kept. Identification of the film as the one actually worn by the subscriber must be positive.

Dosimeter. The word "dosimeter" usually means the pocket-type electrometer worn on the person, as a fountain pen is worn. Initially, this type is more expensive than the film badge type of dosimeter. A common dosimeter is calibrated in 20 mr steps from zero to half a roentgen. Low energy radiation may not be measurable by all dosimeters.

There are two varieties of pencil type pocket instruments. In the pocket dosimeter, the wearer can hold the instrument up to the light at any time and determine whether he has received a sudden or heavy dose, or if he is getting close to his allowed weekly exposure. A second type, the pocket ionization chamber, requires auxiliary reading equipment. These devices have been compared to the automobile odometer — indicating cumulative radiation as the odometer indicates total mileage.

For known low-level work, film badges and pocket meters worn by employees may be the only instrumentation needed.

Pocket dosimeters or ionization chambers are worn in pairs, and the lower of the two readings recorded. Sometimes a high reading appears that proves on investigation to be invalid. Some accidental discharge may occur when certain types of pocket meters are dropped. After each shift, pocket meters are read, the results recorded as with film badges, and the meter reset.

Film badges and/or pocket meters should be issued to all personnel working in areas where experience or surveys with appropriate instruments indicate actual or potential exposure. Some individuals may be required to wear a film badge, developed and replaced periodically, and two pocket dosimeters.

A company that processes its own film badges has direct supervision over the quality of the work and can process and read the film immediately. But, it can be an advantage to have an impartial third party testifying as to procedures in case of litigation.

Special equipment. Some items of specialized personal protective equipment which may be needed are goggles, rubber gloves for laboratory work, canvas gloves for manual labor, disposable clothing, and approved respiratory devices. The latter may be either mechanical filter respirators, air purifying respirators, self-contained breathing apparatus, or supplied air respirators.



Glove boxes allow handling of low level radioactive materials without the use of remote control equipment. This unit has dual air filters, a guillotine air lock between compartments (operated by lever, foreground), and is constructed of stainless steel and laminated safety glass.

Ventilation

Glove boxes. Some materials can be handled in enclosures called glove boxes. These provide a special atmosphere with its own air supply, exhaust system, and lighting. Glove boxes permit manual performance of operations with low activity materials, instead of using remote control.

Filters. Efficient filters are vital in preventing release of contamination. Tested filters may be purchased. Special filters are tested by companies selling such services.

Waste Disposal

Waste disposal is an ever-present problem for the plant working with radioactive materials. Low level solid wastes are placed in receptacles lined with paper or plastic bags. Solid wastes of high activity are put in shielded receptacles collected on a routine basis or when radiation intensities exceed permissible levels.

Bio-Assay

Bio-assay is the most widely used method for estimating radioactive burden deposited in humans. The most common anaylses are of breath and urine. Although a large fraction of the total soluble material is

rapidly eliminated from the body in urine, the remaining amount becomes incorporated in the body and is passed at a rate which depends on both the specific material involved and the biological residence time of the material in the skeleton and various body organs. The period of slow elimination may last either for a few months for loosely-bound materials, or years for more tightly-fixed species. Urinalysis can be used to estimate radioactive materials within the body.

Bio-assay samples should be scheduled according to the potential exposures. Two or three analyses per year per exposed employee are recommended until experience indicates that the schedule should be increased or decreased. For some employees, very infrequent analyses may be adequate. In addition, a sample should be taken during preplacement examinations and on termination.

A side benefit of bio-assay may be the improvement in attitude of a radiation worker who has slipshod habits if bio-assay results show a positive uptake of activity.

Some commercial laboratories provide analytical service for bio-assay specimens.

Other services available are:

1. Environmental activity surveys including sample collection and analysis of air, smear, water, soil, vegetation, animal tissue, and milk.
2. Urinalyses for gross radioactivity or specific radioisotopes.
3. Special analysis for radioactivity in blood, feces, saliva, mucus, and breath.
4. Procedure development.
5. Procedure manuals.
6. Decontamination.
7. Radiation hazard evaluation for legal, insurance, and public relations programs.
8. Consulting.
9. Complete health physics programs.

Instrumentation

Although radiation is not detectable with the senses, the hazards are more controllable than many other dangers because proper instruments can measure the degree of hazard.

Not only amounts, but different kinds of radiation can be detected with proper instrumentation. Some instruments do only one job, while others detect several types and

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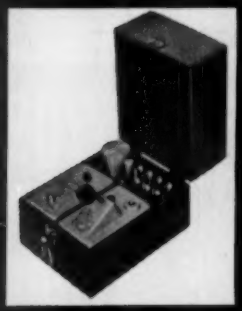
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levels of radiation. The devices used for alpha monitoring are proportional counters, ionization chambers, and scintillation detectors. Beta and gamma radiation is normally detected by ionization chamber or Geiger Mueller tube instruments. An alpha-beta-gamma survey meter is useful in checking hands, bench tops, coats, and equipment for contamination and in locating relatively small amounts of spilled radiochemicals.

Proper instrumentation is vital to measure and control the dose of penetrating ionizing radiation, especially to the lenses of the eyes.

It is also most important to prevent radioactive materials from entering the body through the lungs. Routine air sampling or a constant air-monitoring may detect releases.

Several air samplers are available. They may be purchased complete, or the parts may be ordered separately. If a direct recording instrument is not purchased, particulate contamination may be collected on filter paper. The filter paper must then be counted with a system for alpha or beta-gamma counting, such as a scaler, alpha probe, or beta-gamma tube. Gas flow proportional counters are also available. Radioactive gases may be collected in evacuated bottles or freeze-out traps containing liquid air or nitrogen. Later these gases can be measured. Some direct measuring instruments are also available.

Air samplers designed for constant flow enable the user to determine exactly how much air the sample came from and give a true time average of the changing concentrations of contaminants in air.

If large numbers of employees must be checked in a short period, as at a shift break, hand and shoe counters may be justified.

A vest-pocket-size dose-rate alarm that gives a signal audible several feet away has been developed. The transistorized unit weighs less than 7 oz. The device can also give a visual alarm.

The amount of the various radioisotopes which may be discharged into sewer systems has been determined by the AEC. Effluent may be checked by continuous liquid monitoring systems.

Decontamination

The important thing about a spill of radioactivity is to be ready for it. A spill is most likely to occur where unsealed radioactive chemicals are used. Liquids and powders, of course, are more likely to cause trouble than solid sources of radioactivity. Contamination can also occur because of:

1. Power or mechanical failure in the laboratory exhaust system. This may cause a rapid buildup in airborne radioactivity.
2. Volume reduction evaporation of uncovered radioactive liquids.
3. Radioactive powders made airborne by gusts of air.
4. Chemical explosion.
5. Breaks in vacuum equipment.
6. Accidental volatilization of radio-chemicals.
7. Mechanical damage causing rupture and resulting in leakage from sealed sources, particularly radiography, clinical, or beta gauge sources.
8. Fires which consume radioactive materials and result in the release of radioactive gases or particles. Fires are particularly hazardous, for the water used to extinguish them may cause further spread of the contamination.

Regardless of how the contamination occurs, prompt discovery is important in minimizing damage. Properly trained personnel and continuous routine monitoring procedures make it possible to deal with an accident with the necessary speed.

When a serious release of radioactivity occurs:

1. Notify the health physics officer, industrial hygienist, or radiation safety man.
2. Give immediate consideration to changing the air flow system to minimize the spread of contamination.
3. Shut off the water supply (ex-

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Monitoring a drum of low level waste with a portable instrument before disposal is accomplished. Note canvas gloves and respirator for use where contaminated dust is present.

cept fire fighting water) to the affected area.

4. Close the valve, if any, on the sewerage line from the area, if it leads to public disposal system.

5. Evacuate all personnel.

6. Seal off cracks in doors and windows with masking tape, and post "Danger" or "Off Limits" signs.

7. All persons in the affected area should shower and be monitored for contamination. Secure medical aid, if necessary.

8. Monitor all personal effects, clothing (especially shoe soles), and tools before reusing.

9. Arrange for urinalysis or bioassay of specimens from exposed personnel if these are considered necessary.

10. For a serious spill, other notification may be necessary or desirable. Check this out in advance with the AEC or others who may be able to help in the evaluation of conditions or in providing emergency monitoring assistance.

People working with radioactive materials should have "spill drill" often enough so they know exactly what to do with the greatest speed. They should know where all switches are located, and know how to shut them off as quickly as possible. These switches and valves should be prominently labeled.

For the cleanup, there are legal and psychological advantages and disadvantages in having outside decontamination specialists do the work. This possibility should be considered at the outset of the work.

To prevent the spread of contamination, special clothing marked for wear only in contaminated areas should be worn by workers in the area. Anyone leaving should be monitored.

Where spills are likely to occur, surfaces can be protected by paper, which can be disposed of in the dry active waste. Sometimes special strippable paints are used for walls so the wall surface can be taken off and properly disposed of.

This, of course, involves repainting to protect the porous surface underneath. If a non-porous surface can be applied in the beginning, normal cleanup procedures can remove contamination. One surface that can be applied over normal building materials is a thermal-setting plastic that cures into a chemical-resistant, non-porous coating. This material has been used for walls and ceilings of hot cells, laboratories, corridors, shower rooms, washrooms, and locker rooms. With a fiberglass reinforcement, it is used for floors to resist deep contamination.

It is obvious that ordinary cleaning tools such as brooms are not to be used in cleaning dry contaminated surfaces. An explosion-proof vacuum cleaner with special fine filters can be used to remove radioactive dust. Wet system vacuum cleaners have been used. For major spills, very careful preliminary cleanup is essential.

Fire and Explosion. Normal fire prevention procedures can eliminate some of the most serious contamination hazards. Smoke can carry activity hundreds of feet, if a fire occurs around some radioactive materials. An explosion can raise tremendous quantities of radioactive dusts from surfaces where it has settled. Serious inhalation hazards can result from even a small explosion. Early fire

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After protective clothing has been laundered, these women "iron" garments with radiation counters to make sure no contaminants remain. Small plants can use such services.

warning and fire control becomes even more important where radiation is involved.

Radioactive particles can be imbedded in the flesh by explosion.

External Radiation Protection

Distance. Time, shielding, and distance are the three means of protection from external radiation, which must always be considered separately from the problem of internal radiation. A little distance goes a long way in increasing safety. The rate of exposure falls off rapidly as we move back from the source of radiation. The radiation intensity for a point source varies as the inverse square of the distance from that source. This is the reason for the widespread use of tongs and remote handling equipment.

Shielding. No shield will stop all penetrating or "hard" radiation, but it is possible to stop all but an insignificant amount. There is a variety of shielding materials. Where it is desirable to see through the shield, water or transparent solutions can be used. Where space is limited, an extremely dense material such as lead is more practical. Lead has its limitations in most buildings of conventional construction because floor loading capacity is limited.

Time. The simplest way to limit a worker's exposure is to limit the individual's working time. The maximum permissible working time can be calculated by dividing the maximum permissible doses by the exposure rate. A field of constant radiation is assumed in this case. Sometimes the easiest thing to do in a cleanup is to wait for the radioactive material to decay significantly. If the material has a short half-life, the room can be back in use soon. If the half-life is 24 hours, the activity will be less than 1 per cent in a week.

Internal Radiation Protection

Internal exposure control is essentially a problem of contamination control. This may be accomplished by the use of well-designed exhaust ventilation at the source, or by wearing protective clothing and equipment. Immaculate housekeeping and safe work habits are also essential in lowering contamination.

Laundry

Reliable laundry services, properly used, can eliminate the problem of contaminated clothing. Protective clothing can be rented, kept in repair, and cleaned regularly by an industrial laundry equipped with its own laboratory, waste disposal facilities, and monitoring equipment. The user should make certain that operations are performed according to city, state, and AEC regulations.

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SECTION 11

MEDICAL AND HEALTH SERVICE

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Ground Rules Given for Medical-Safety Team

By GILBEART H. COLLINGS JR., M.D.



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ARTICLES which follow in this section deal effectively with the content of industrial health service programs. But since the majority of readers are apt to have safety backgrounds and interests, I would like to begin the section with a brief discussion of an important matter — effective cooperation between medical and safety departments.

It is unfortunate, but too common, to find either the lack of really effective cooperation between these two activities or even outright hostility in some instances. Having known many safety engineers and many industrial physicians, I believe difficulties between them arise from fairly simple aspects of human relations and from a few potentially loaded situations.

I am convinced there need be no fundamental antagonism and neither can function optimally without close cooperation. Considerable accomplishment in both fields is being neglected by mutual failure to recognize and take preventive action for such difficulties.

First, it should be recognized that industrial health is necessarily a team matter. The average industrial physician is not naturally accustomed to being a team performer. He is usually a part-time industrial employee. He has been trained to perform as an individual. He has been indoctrinated to be self-sufficient. And he resents real or apparent lay interference with medical matters.

Under the circumstances it is a most unusual industrial physician who sees need for and, more important, can adapt to team approaches. Safety engineers who recognize this can, by judicious and appropriate action, help the physician see the need and assist in his reorientation to group action.

Perhaps more to the practical point, any undesirable behavior on the physician's part brought on by these circumstances can be overlooked or minimized by the understanding safety engineer.

Next on the list of common causes of trouble is the problem of confidential medical information. The physician properly guards this facet of his service with determination, for if he does not he can have little in the way of an effective program.

Not all information in the records of the industrial physician is confidential, and more importantly many of his evaluations and interpretations of medical information are not confidential. The safety engineer who asks for all medical information is asking for more than he can properly have and more than he needs. On the other hand, the physician who says that everything he knows is confidential is in error.

The physician must supply functional information regarding work capacity to supervision, if effective day to day safe work performance is to be guaranteed. Otherwise, it does little good to have determined the physical status of the individual in the first place.

If a reasonably clear understanding of what is confidential and what is not can be reached, a serious obstacle to medical-safety cooperation will have been eliminated.

Need exists for complementary function between medical and safety activities. The average safety engineer is a highly experienced, practical minded person in intimate contact with the work environment. The doctor is a well trained, super-educated individual in intimate contact with technical matters in health.

The doctor's actions in handling of industrial problems will be improved by consultation with the safety engineer, if he will ask for such assistance and accept it. At the same time, the safety engineer must be aware that a great deal is at stake and should not be jeopardized by loose talk about matters on which he is consulted or his opinion of them.

He should guard against the temptation to appear important by broadcasting his inside information on a case or a health situation. Such behavior does no good for either the safety or medical programs.

The physician who witnesses judicious, conservative and understanding handling of matters of mutual interest on the part of the safety engineer will be more inclined to relax his attitude in future matters.

Over-compartmentalization of respective interests is worth mention. The medical officer commonly takes a hands-off attitude to anything relating to safety, thinking he is promoting harmony.

Principles mentioned previously, along with a cooperative attitude, will take care of relationships, and the medical staff should interest itself in safety and vice versa.

How many plants currently take advantage of these avenues to better results all around? Does yours?

Preventive Maintenance for Employees

Keep them fit to keep them safe

EMPLOYEE HEALTH maintenance in industry is accomplished through prevention and treatment. Industrial health programs will vary with need, but the aims will be generally the same:

1. Supervision of processes and the working environment to provide safe and healthful working conditions.
2. Services for the treatment of occupational illness and injury.
3. Supervision of the health status of the individual through examination, counseling, and placement.
4. Health education.

New processes and materials with actual or potential health hazards have brought additional problems to the medical department. To study hazards and devise protective measures for those who manufacture the products and those who use them, some large corporations maintain industrial hygiene laboratories.

Smaller companies obtain help on medical and health problems from insurance companies, state departments, laboratories maintained by universities and research organizations, and from consulting industrial hygienists.

Scope of Program

Industrial medical service requires an organized plan and it must have management's full support.

Essentials of the program are:

1. A staff of qualified physicians, nurses and attendants.
2. Adequate facilities conforming to standards established by the Industrial Medical Association.
3. Effective care of occupational injuries and diseases.
4. Reasonable first-aid treatment for nonoccupational injuries and illnesses while on the job.
5. Physical examinations – pre-employment and periodic.
6. Adequate records of treatments and individual medical histories. Medical records should be kept confidential.
7. Supervision of plant sanitation and hygiene measures.
8. Instruction of employees in personal health and safety.

Industrial medicine recognizes the place of the private practitioner in providing medical care for the employee and his family.

Hospitals. Use of community hospitals, where available, is usually more desirable than setting up elaborate in-plant facilities for surgery and treatment of serious cases.

The Staff

The medical director. Health and medical services should be under the supervision of a physician. Management and the medical director can formulate workable policies.

Medical assistants, consultants, nurses, and others should be selected on the recommendations of the medical director.

A full-time physician may be warranted by size of the plant or nature of its operations. Sometimes a plant physician engages in private practice with the company's approval. He may devote part of his time to the industrial organization, assuming supervisory responsibility and delegating detail work to qualified assistants.

The nurse. Most industrial nurses are employed by companies which have single-nurse dispensaries and a part-time physician. The nurse is assistant to the physician and his representative when he is not at the plant. She is also friend and confidant of the employees.

Where the nurse is the only full-time person in the dispensary, her duties include:

1. Maintaining supplies and equipment.
2. Providing first-aid care for injuries and emergency treatment of illnesses as authorized by the physician in charge.
3. Assisting the physician with medical examinations.
4. Participating in the health and safety program.
5. Promoting health education and counseling employees on personal-health problems.
6. Taking part in welfare activities.
7. Keeping adequate dispensary records. Paper work should not be permitted to interfere with professional duties.
8. Being familiar with the plant and its hazards through plant tours.

The health program may require the services of other specialists, such as industrial hygienists, safety engineers, and sanitary engineers.

Cooperative services. Where several small plants are close together a cooperative medical service program can often be maintained. A central dispensary with necessary personnel and equipment is maintained. Adequate service can be provided at moderate cost.

Physical Examinations

Pre-placement examinations are standard procedure in many companies. Their purpose is to place each employee in a job suited to his capacity rather than to bar anyone from a job.

Periodic checkups are desirable, particularly for elderly employees, for those in jobs where safety depends on physical fitness, and where there is exposure to health-hazardous materials.

Examinations include vision, heart, chest, blood pressure, hearing, and urinalysis. In some industries tests will require elaborate laboratory facilities and highly trained personnel.

Laboratories. For most industries, facilities for taking urine tests and blood counts are needed. Blood serum samples can be sent to a laboratory for analysis. Where a large volume of toxicological tests is conducted, a plant laboratory may be desirable.

Vision. Several devices for testing visual acuity and classifying workers for jobs are available. These devices can be used by trained laymen. Employees showing visual defects are referred to ophthalmologists or optometrists for further tests.

Hearing. By means of the audiometer, acuteness of hearing can be determined and any necessary treatment indicated. Progressive loss of hearing, due to noisy work or other causes, can be measured.

Chest. For many occupations, pre-employment and periodic examinations include chest X rays. Mass chest surveys are made at regular intervals in industries where health hazards indicate frequent checks, and in public health campaigns to

detect incipient cases of tuberculosis and cancer.

Trained technicians with mobile equipment can be engaged to conduct mass X ray surveys.

Consultants

The medical director, like the private practitioner, is not an expert in all branches of medical science. Both find it necessary at times to call on specialists when diagnosis is uncertain or treatment requires specialized techniques.

Surgeons. In all surgical cases where there is danger of inaccurate diagnosis or inadequate treatment, an outside consultant should be called promptly. Frequently, the administrative and diagnostic ability of the medical director is more important than skill in surgery. The plant physician should refer all cases which might be beyond his training to a specialist or surgeon.

Oculists. One of the most frequent occupational injuries is to the eyes. The importance of one's eyesight justifies obtaining the highest available skill. Specialists should be summoned in all potentially serious cases.

Ophthalmologists and optometrists also can serve industry in correcting defective vision among employees. The employee should, of course, have the privilege of choosing his own refractionist, but frequently he will ask advice of the medical department on selection of a specialist.

Where prescription goggles are indicated, some companies provide the examination.

Dentists. Injuries to the teeth are relatively infrequent in industry. Such cases usually are sent outside for treatment. The medical department should have a list of dentists qualified to treat such injuries.

The importance of oral hygiene has led many companies to provide dental examinations, sometimes including full-mouth X-rays and oral prophylaxis. Findings are usually referred to the employee's dentist.

Mobile Clinics

A recent development in industrial health service is the mobile clinic which makes it possible to extend medical coverage to more employees.

The simplest type, which consists of a trailer towed behind a car, is equipped to give some of the simpler tests. More elaborate is a bus-type vehicle housing facilities for visual, hearing, and X-ray examinations. It is practically a self-sufficient medical department and laboratory on wheels.

Giving First Aid

A first aid program depends on facilities, equipment chosen, and training given

SKILLED HELP and adequate first aid facilities close at hand can prevent many minor injuries from becoming serious ones.

These should be provided as completely as possible wherever people work, travel or play. Forethought is necessary in planning for potential injuries and illness, if on-the-spot treatment is to be effective.

A physician or nurse should treat injuries wherever possible. Companies which have trained large numbers of first aiders do not permit them to treat injured persons if medical service is available. Their training is strictly for emergencies.

Most injury cases, however, both on the job and outside, are first handled by laymen. The minutes before a doctor's arrival may be vital. Many a life has been saved because some person on the spot was able to check bleeding, treat shock, or apply artificial respiration.

Many laymen acquired skill in first aid during military service. Many civilians have been trained by the American Red Cross and the Bureau of Mines in the United States, the St. John's Ambulance Association in the British Commonwealth, and by similar organizations in other countries.

Adequate care of the injured requires:

1. Trained attendants.
2. Clean, convenient quarters.
3. Equipment and supplies that meet medical standards.
4. Well-planned organization and procedure.

This discussion is primarily concerned with plants which must depend on trained laymen, or at most a full-time nurse and part-time physician rather than those with medical staffs and hospital facilities.

The staff. First-aid facilities should be under supervision of at least a part-time physician. A full-time registered nurse is desirable, even in a medium-sized plant.

If a full-time nurse is not practicable, at least two employees who have completed standard first-aid courses should be selected to carry on the work. They should be under supervision of a doctor or nurse.

Attendants should be allowed sufficient time from their jobs to maintain the first-aid room, check supplies and keep necessary records. An attendant should be available during working hours.

The Dispensary

A separate room should be provided, if possible. Patients should have reasonable privacy. If it is not practical to partition the dispensary into a waiting room and a treatment room, a screen can be used.

The first-aid room should have:

1. Good lighting.
2. Adequate ventilation and comfortable temperatures.
3. Lavatory with hot and cold running water.
4. Quiet location.
5. Floors of durable and easily cleaned material.
6. Toilet facilities.

The first-aid room should be quiet, well ventilated and away from doors. Windows should be screened to keep out insects.

Furnishings should be simple and neat. The color scheme has an important influence on the patient. Walls painted with semi-gloss enamel in light tints of green, cream or buff are cheerful and easy to keep clean.

A patient who is nervous or in a state of shock may be upset still more by intricate patterns on walls and ceilings.

The floor should be resilient and easy to clean. Linoleum, rubber tile, vinyl tile, and asphalt tile are practical for dispensary use. A sweeping compound, a vacuum cleaner with brush attachments, and damp or chemically treated cloths

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The dispensary should be well lit, quiet, well ventilated, and efficiently arranged.

for dusting help to keep down dust.

Equipment. For a dispensary with a registered nurse in charge under the supervision of a part-time physician, equipment might include:

1. Two white enameled chairs and a bench.
2. Enameled top table or desk.
3. Stool.
4. One or more beds or cots.
5. Linen and blankets.
6. Waste can with cover.
7. File for medical records.
8. Floor lamp.
9. Treatment table and instrument cabinet.
10. Medicine chest.
11. Small sterilizer.
12. Small items of office and surgical equipment, such as basins, pitchers, rubber gloves (sterile), scissors, tweezers, forceps, hot-water bottle or electric heating pad, ice bag.
13. Stretcher.
14. Telephone

First-Aid Kits

If the dispensary is staffed by non-medical personnel, keep the setup as simple as you possibly can.

The supervising physician should be consulted about selection of materials, particularly when medication is involved. He should select such items as first-aid antiseptics and burn dressings.

Unit first-aid material is replacing bulk supplies for smaller plants, for small groups detached from a central headquarters; men working in isolated areas where medical help is not available; and on trains, buses, trucks, and airplanes.

Unit first-aid material is desirable because each dressing and treatment is an individual unit, for one-time use only. Materials can be kept sanitary for long periods. There is more likely to be a sufficient quantity and wider assortment of bandages.

Kit sizes and their contents are determined by the number of persons to be protected, with consideration given to the nature and frequency of injuries likely to occur. Kits come in 10-, 16-, 24-, and 36-unit sizes. A 24-unit kit, for example, would be suitable for a group of 50 men.

Specifications outlined in Federal Specification GGK-391 (Amended) are generally accepted and used by manufacturers in the production of unit first-aid material and kits.

For operations under federal regulation, assortments have been specified, although these may not fit all local requirements. Contents of kits include:

Adhesive bandages
Burn compound
Burn solution
Petroleum gauze
Ammonia inhalants
Antiseptic swabs
Antiseptic applicators
Tincture green soap
Eye packets
Bandage compresses—2-, 3-, 4-in.
Tourniquet
Forceps
Scissors
Triangular bandages
Gauze pads
Gauze bandages
Gauze compress
Adhesive tape
Aspirin or other analgesic
Sodium bicarbonate tablets
Poison ivy ointment
Insect repellent

If poisonous snakes are likely to be encountered, a snake-bite kit should be included.

Most companies follow the recommendations of their plant physician when ordering first aid kits or supplies.

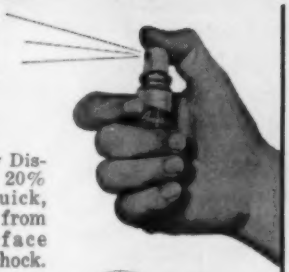
The unit system does away with many of the objections to first-aid kits, but a competent and conscientious employee should be responsible for dispensing supplies. Employees may help themselves, often for home use, and supplies may not be replaced. Also, self-treatment should be discouraged.

For the smaller plant, ideal quarters for a first-aid station may not be available; but the best possible spot should be chosen. It should be readily accessible to the working zone and convenient for supervision and maintenance.

Hot and cold running water and toilet facilities are desirable for the small plant. Privacy is also important and a screen will do if a separate room is not available.

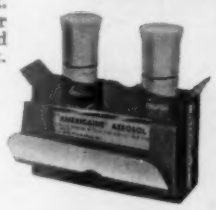
Equipment may be selected from lists suggested for dispensaries, keeping in mind space limitations and

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plant requirements. The following are essential:

1. Desk or table for filling out reports and records.
2. Chair or stool.
3. Filing cabinet for records.
4. Waste can with cover.
5. Bulletin board.
6. First-aid manual.

Dispensary Records

Accurate records should be kept of treatments. If injuries are infrequent, a small day book may be sufficient, if systematically kept. Entries should include these details:

1. Date and time of injury.
2. Date and time injury was reported for treatment.
3. Name of injured.
4. Address of injured.
5. Where and how injury was received.
6. Names, addresses, and telephone numbers of witnesses.
7. Nature of injury.
8. Kind of treatment given, and by whom.
9. Did employee return to work after treatment? If not, when?

First-Aid Antiseptics

Infection in an open wound can be prevented in most cases by removing germs already present and preventing entrance of more. Thorough washing with soap will mechanically remove organisms and a sterile bandage will prevent entrance of more. Antiseptics and antibiotics should be used only under medical supervision.

Transporting the Injured

Where there is any doubt about moving the patient, medical aid should be brought to the scene of the accident, if possible. Lifting a patient into a car may aggravate injuries.

Before the patient is moved he should be treated for possible shock. Fractures should always be splinted.

Stretchers. The army type is easy to handle. It can be used as a cot at the scene of the accident, in transit, and at the first-aid room or hospital. It is frequently stored in a canister in a conspicuously marked spot to keep it clean and ready for use.

Collapsible stretchers may be folded when not in use and carried in an automobile. Some are equipped with wheels and an adjustable head rest.

Bandages, splints, and stretchers may be improvised in emergencies if regular equipment is unavailable.

Training. It is often found that accidents are less frequent among persons trained in first aid and it is advisable to have as many employees as possible receive this training.

The American Red Cross first-aid textbook and the U. S. Bureau of Mines manual of first-aid instruction are recommended references.

References—Care of Injured

National Safety Council

Unit First-Aid Kits, Data Sheet 202.

Pole-Top Resuscitation; Data Sheet 376.

Snake Bite Manual.

National Safety News

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Is Your Plant Immune to Asphyxia? John B. Dunne, Nov. 1957.

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Oxygen Resuscitation; Ralph E. DeForest, Apr. 1959.

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Snake Bite Needn't Be Fatal; A. C. Stimson and H. T. Englehardt, M.D., May 1960.

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First Aid and Resuscitation. Carl B. Young. Charles C. Thomas, Springfield, Illinois, 1954.

Transportation of the Injured. Carl B. Young. Charles C. Thomas, Springfield, Ill., 1958.

Keeping Records

ALTHOUGH PAPER WORK should not interfere with operation of industrial medical service, records are as necessary here as in any business enterprise. Incomplete or inaccurate records will be of little use.

A form which will meet the company's needs can be drawn up by the nurse. It may require revision from time to time to add new items or delete others as dictated by experience or changing circumstances.

Data on pre-employment and periodic health examinations should be included in the medical records. Occupational diseases, and advice



First aid report forms can be brief, but space for more complete information may be desired.

or treatment for non-disabling ailments should also be recorded.

Records should include:

Medical Records

1. Personal items (employment data):
   - Name and address
   - Shop number
   - Age
   - Sex
   - Race
   - Marital status
2. Plant items (occupational data):
   - Department
   - Occupation
   - Previous occupation
   - Length of employment
3. Scientific items:
   - Date of examination
   - Physical exam classification

When employees returning from absences due to physical reasons are cleared through the medical department, the following additional data are needed:

1. Date of onset of symptoms
2. Date of disability
3. Diagnosis by attending physician
4. Name and address of attending physician

Certification of fitness for work from the attending physician or plant physician may also be required. This may involve physical examination, for which findings should be included in the records.

Accident Records

1. Personal items:
   - Name and address
   - Shop number
   - Sex
   - Race
   - Marital status
2. Plant items:
   - Department
   - Foreman's name
   - Occupation
   - How long employed
   - Physical exam classification
   - Were guards provided and in place? Could they be used?
   - Cause—mechanical or non-mechanical
3. Scientific items:
   - Part of body injured
   - Nature and extent of injury
   - Treatment
4. Economic items:
   - Amount of production time lost
   - Amount of wages lost
   - Cost of doctor, drugs and hospital
   - End results

Record cards for various classi-

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fications are similar. In some instances, however, items are added to cover special needs. Reference is facilitated if various forms are printed on cards of different color.

An orange card would show an employee's pre-employment and periodic check-up examinations and visits to dispensary for treatment of nondisabling complaints, with date, complaint, diagnosis and treatment.

A blue card might cover absences from work for nonoccupational physical reasons.

A yellow card might cover any occupational disease—disabling or nondisabling.

A white card would list all disabling accidental injuries.

With these cards, the employee's file would contain his complete health record, easily analyzed under several important categories.

Such a set of records kept over a year would provide many types of information. For example, by noting the ages of accident cases, the doctor, nurse or safety director could tell whether older or younger workers suffered from more injuries.

By running through the cards by department, it is possible to pick the danger spots in the plant and concentrate on them.

Helpful information about types of injuries could be obtained by this method. The number and severity of infections as revealed by the cards might indicate the effectiveness of first-aid methods.

Number of fractures and periods of disability, number of treatments for complete healing of lacerations could be studied. Many other studies could be made and the findings applied.

Names and addresses should always be recorded. In case an employee should be absent the day after treatment, it may be important to learn whether his absence is the result of the injury. A correct address on the record facilitates investigation.

Information on these records may be properly discussed with the worker, with professional discretion.

Transcripts or pertinent data may be supplied to another physician or to health agencies.

When required by law, data contained on the worker's record may be given governmental agencies such as courts, workmen's compensation commissions, or health authorities.

In general, records are kept for the benefit of the worker – to keep a check on his fitness, his ability to perform his job, the effects of his job on his health, and his safety record.

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Ways and Means of Resuscitation

Manual methods or mechanical, you've got to know how to use them

RESUSCITATION by a person trained in one of several methods of artificial respiration has saved thousands of lives. Since asphyxia hazards are common throughout industry and elsewhere, training in resuscitation methods is clearly an important part of first-aid training.

Such training may prove a life saver in the following instances:

1. When air is excluded from the lungs, as in near drowning, choking, strangling, etc.
2. When exposed to gases that displace oxygen in the circulating blood, as in carbon monoxide poisoning.
3. When exposed to oxygen-deficient atmosphere, as in silos, wells, vats, tanks, etc.
4. When the respiratory system is depressed or paralyzed due to electric shock, alcoholic intoxication, overdoses of certain drugs, etc.

Methods

For centuries men have been seeking improved methods of artificial respiration. Some techniques were the result of superstitions: others had scientific basis and were effective under favorable conditions.

Methods in current use may be classified as:

1. Mouth-to-mouth or mouth-to-nose.
2. Manual.
3. Mechanical.

Any of these methods is ineffective or of questionable value if the rescuer is unable to maintain an open airway. Even a relatively inefficient method may be effective if an open airway can be assured and treatment begun promptly.

Mouth-to-mouth (or mouth-to-nose). This method has been approved by the National Academy of Sciences-National Research Council Ad Hoc Committee as "the most practical emergency method for emergency ventilation of an individual of any age who has stopped breathing, in the absence of equipment or of help from a second person, regardless of the cause of cessation of breathing."

This method may be applied by breathing directly into the asphyxiated person with mouth-to-mouth contact, through an artificial airway, or into a mask. Techniques will be effective only if a clear airway is assured.

Manual methods. Two manual methods are currently recommended: the Holger-Nielson back-pressure, arm-lift method, and the Sylvester chest-pressure, arm-lift method. According to the *Supplement on Artificial Respiration* which now accompanies the American Red Cross first aid and water safety textbooks, these methods will continue to be taught and used. But

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56 LITER UNIT



305 LITER UNIT

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certain devices provide the asphyxiated person with oxygen. These are inhalators and resuscitators.

The inhalator may be defined as an oxygen-administrating device providing a continuous air supply. Inhalators must be used in combination with some form of artificial respiration if the victim is not breathing. An inhalator is also of value when the subject is capable of breathing effort, supplying oxygen which aids in the rapid recovery of a patient when breathing is labored.

The resuscitator may be defined as a device which breathes automatically for a victim when normal breathing has ceased.

For first-aid purposes it is the consensus that all of these devices should provide oxygen and not add other gases. When devices similar to these are used in hospitals, combinations of gases are used, but since in most cases the primary function of artificial respiration is to raise the blood oxygen saturation and lower carbon dioxide tension, first-aid trained personnel should use equipment that feeds only oxygen.

People who use mechanical devices for resuscitation purposes should be thoroughly trained in the operation of that particular machine. The machine should be checked out regularly with the same thoroughness as fire-fighting equipment. The most important aspect of the operation of mechanical devices is the same as in the case of manual methods—the ability to obtain and maintain a clear airway.

Industrial accidents involving asphyxiation by poisonous gases like carbon monoxide or hydrogen sulfide, by a lack of oxygen as in manholes and tanks, drowning, or electric shock are not uncommon. These situations require immediate treatment.

Application of mouth-to-mouth or manual methods should be started while waiting for mechanical devices. Promptness is vital.

The pharynx of all asphyxiated persons should be checked frequently to make sure there is no interference as a result of evacuation of stomach contents or accumulation of mucus.

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NOTE: The first few minutes after breathing has ceased are the most critical. Manual artificial respiration should be started immediately and continued until the resuscitator is in use.

For free bulletins, *Medical References on Resuscitation, Emerson Method of Artificial Respiration* and *Emerson Resuscitators for industry*, *write:*

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Organizing for Emergencies

Disaster plans insure coolheadedness when lives depend on it

THE AIMS of emergency organization plans are rapid restoration of normal plant activity and communications. In most instances, this restoration will have to be a combined effort by all industrial and commercial concerns in the area, municipal services, and the regional civil defense organization.

The purpose of such a plan is to direct workers to safety, rescue trapped persons, give first aid, repair damaged water mains and utility lines, fight fires, and restore normal operation as quickly as possible. No less important, it can allay panic and raise morale.

Emergency organization should not be considered merely as a defense against enemy action. It is even more important for the help it can render in case of man-made or natural disasters, such as fires, explosion, floods, tornados, hurricanes and earthquakes and similar catastrophes.

Civil defense. Contact the local civil defense director, and dovetail plant emergency plans with the available CD setup. Arrangements also should be made with neighboring industrial groups for mutual aid.

Make provisions to lend each other fire-fighting, demolition, and first-aid equipment. Put duplicate lists of equipment at member plants on file in the offices of each plant's security chief. Arrange for an exchange of established emergency services, such as warden, medical, and fire.

The Federal Civil Defense Administration has on hand useful publications that can be adapted to the needs of individual or mutual-aid plans.

Coordinator. Choose a coordinator who has the confidence of management and the work force and who can take complete charge, without divided authority, in an emergency situation. For specialized in-



Regular drill prepares employees for emergencies. Here a team practices first aid administration.

formation he can call on outside consultants, such as representatives of casualty and fire insurance underwriters.

Make a survey of plant buildings and shelter requirements. Any area selected as potential shelter should be in the center of the building, away from outside exposure. "Outside" includes courts and light shafts.

Areas should be in a part of the building that is structurally compact, with close spacing of columns and short-span beams. They should be out of direct line with doors, windows and hallways exposed to the outside. Walls and doors surrounding the area should be free of glass.

Stairways. There should be at least one interior stairway, not adjoining an outer wall. Areas should contain no furnaces, or boilers, and no large steam, water or gas pipes. The ceiling should not be of the hung or suspended type, or have heavy lighting fixtures or plaster ornaments.

The area should be as free as possible of furniture, stored merchandise or equipment of any kind. There should be no safes, banks of filing cabinets or heavy machinery on the floor above.

Hallways, corridors, fire stairs, rest rooms and elevator lobbies in the center of buildings are good locations, if free of glass.

Choose, instruct and assign emergency protection personnel: wardens, police, firemen, engineering and rescue workers. Special training courses may be available in some communities.

Floor plan. Make a floor plan showing branch control rooms, first-aid stations or cabinets, fire extinguishers and other equipment, elevators, stairs, emergency lights and exits, and a general traffic plan.

Put up directional and information signs, including evacuation instruction, in offices and other places where plant personnel meet.

Make arrangements for emergency supplies in shelter locations: first-aid kits, water supplies, and emergency lighting. Be sure that emergency personnel have proper identification — arm bands, hats, special clothing or other gear.

Exit drills. Hold exit drills often, and be certain all employees participate. Announce the first few drills ahead of time, but after routine has been established, hold these drills at irregular intervals without warning. Check for weak points in coordination and communication that can be ironed out in post-mortem sessions.

The head of each protective service is logically responsible for the training of his workers. In planning a training schedule, he should cooperate with municipal departments and with the local civil defense organization for effective results.

Double training. Where possible, a person trained in one service should be instructed in other services. This versatility might enable a worker trained in rescue techniques, for example, to fight fires.

Protective-service teams might engage in training exercises with local civil defense organizations.

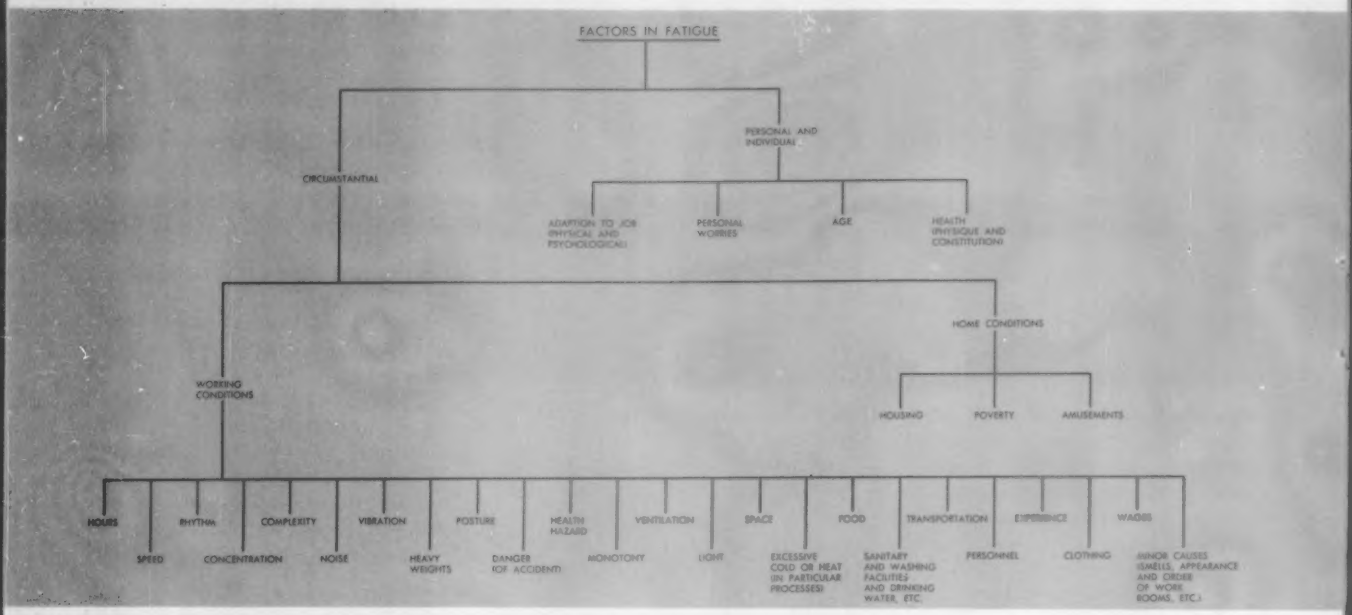
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Fatigue = Accidents

FATIGUE, affecting muscles and nerves, reduces speed of reflexes and accuracy of coordination. The power of concentration on detail is diminished.

A fatigued worker is more prone to accidents than an alert one.

An indication of this is the fact that most work accidents are reported between 10 and 11 a.m. and 3 and 4 p.m. Fatigue is often suspected as a contributing factor.

Other pyschological factors, not related to the job, may also make the worker less attentive to hazard, as may environmental factors.

Overtime is often necessary to meet production schedules, but too much overtime can lower efficiency, increase fatigue, and lower the quantity and quality of output. An overtired worker endangers himself and others.

When much overtime is required, management should take extra precautions. These may involve adjustment of food and medical services, revised rest periods, and renewed emphasis on safe work practices for all shifts.

Rest periods. For monotonous repetitive work, a five-minute break in each working hour is helpful. For less intensive work, a rest period of 10 to 15 minutes in the middle of the first and the last half of each shift is suggested.

At these breaks, snacks, coffee, milk or soft drinks help to restore energy.

Rotating shifts. When plants operate multiple shifts, an attempt is usually made to rotate workers on day and night shifts, when possible. Some firms prefer to rotate shifts

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Preventing and Treating Snake Bite

Proper apparel and training are best protection

AN ESTIMATED 2,000 cases of snake bite occur in the United States each year, and only 2 to 10 per cent of these prove fatal.

Nevertheless, snake bite is an occupational hazard in some activities: snake farms, laboratories, petroleum, construction, public utilities and agriculture work.

Persons who are likely to be in poisonous snake infested areas should be given basic training in safe practices in the field, use of protective clothing, and emergency equipment, and first aid treatment.

A discussion of these, with suggested teaching methods, will be found in the National Safety Council's *Snake Bite Manual*.

In general, safe practices can be reduced to one rule: Don't place any part of the body in a position where it could be within striking distance of a poisonous snake if there were one there.

This means walking where there is good visibility of the ground; walking on high rather than low ground (to avoid being struck on the upper body); and never using the bare hands for doing field or yard work.

Protective clothing available includes snakeproof boots of extra heavy bullhide; snakeproof pants and leggings constructed of duck or canvas lined with flexible Monel wire mesh; and leather work gloves, extra heavy and preferably with gauntlet cuffs.

Emergency equipment should be chosen with care. Several snake bite kits are on the market. A good one should contain a lancet, constricting band, and a suction device. The latter is of prime importance, and should be durable, easy to assemble and operate, and adaptable to different parts of the body.

The kit can also include antiseptic ammonia inhalant for treatment of shock, and bandages or compresses for keeping incisions open during suction treatment.

Training in the use of emergency equipment should be given. Care should always be taken in making incisions, particularly at ankles and wrists, not to sever arteries, blood vessels, nerves or tendons. Sterile conditions must be kept to avoid infection.

Types of Snakes

Venomous snakes in the U. S. fall into four broad categories, three of which are called "pit" vipers because of a pit or indentation between the nostrils and the eyes. In this family are the rattlesnake, the moccasin, and the copperhead.

Venom of the pit vipers is quick-

Fatigue Accidents

each two or three months, instead of every week or so, since the shorter period doesn't give the individual enough time to adapt himself to changed hours.

Health education. Through educational programs employees can learn essentials of personal hygiene, nutrition, posture, recreation and relaxation.

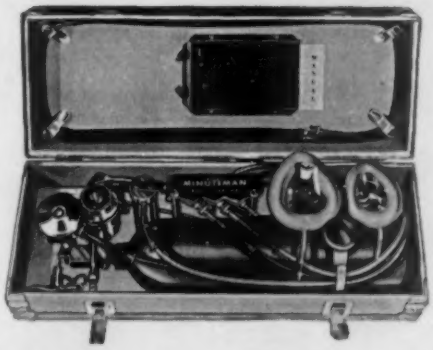
Environment. Many factors, other than the job itself, affect a worker's resistance to fatigue. For instance, ventilation, lighting, noise, washrooms, drinking water, food service, use of color in the plant, and housekeeping are important.

Placement. Work assignments should match the physical and mental abilities of the individual. Physical capacity can be determined by pre-placement and periodical medical examinations. Mental and emotional traits are hard to nail down, but much can be learned in a pre-placement interview and during the first few days on a job.

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This ingeniously compact instrument, weighing under 30 lbs. with tank, combines the functions of three units in one. As a Resuscitator it actually breathes for the patient who is unable to do so. As an Inhalator it is used where the patient can breathe but requires more oxygen. As an Aspirator it clears the air passages of mucus, froth, blood or other obstruction. With an extra Midget attachment, it will resuscitate two patients and aspirate a third simultaneously. Pressures adjustable from Adult to Infant with manual override when needed and with mixtures from 100% oxygen to 50% oxygen—50% nitrogen from the air.



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acting. Its effect is speeded up by unnecessary activity of the victim.

Rattlesnakes are found in every section of the United States and in the Canadian provinces along the border.

The cottonmouth moccasin is found in the marshes and swamps of the southern states.

The copperhead is an upland snake. Its habitat is the rock cliffs that border streams of the Appalachian Mountains.

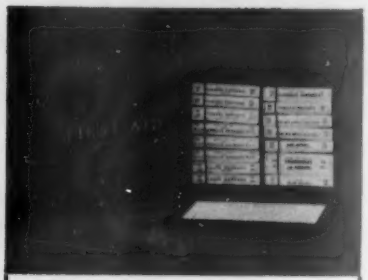
The coral snake resembles the non-poisonous snakes in shape. It is small and colorful. Its seemingly headless body is banded by alternate bands of brilliant black and red, separated by narrower bands of yellow.

Its teeth are grooved and the venom flows into the wound through the grooves.

The quick-acting venom attacks the nerve centers in the brain.

The Coral snake is found in Florida, in the states along the Gulf of Mexico and in the desert areas of the Southwest.

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SECTION 12

SAFETY PROMOTION AND TRAINING

IN SECTION 12:

Accident Control Goes Beyond Engineering
Frank E. Bird, Jr. 282

Attract Workers' Attention— and KEEP It 284

Survive With These Signs . 292

Accident Control Goes Beyond Engineering

By FRANK E. BIRD JR.



Frank E. Bird Jr. is supervisor of safety and plant protection for the Lukens Steel Company. Although a graduate chemist, Bird is more interested in people than equations. He has furthered his knowledge of motivation by graduate study in human relations and practical experience as a truck driver, machine operator, forge leverman, and open hearth helper. As head of the Lukens safety program, he has developed a continuous stream of colorful safety promotions that have sold safety to both employees and management. Many of his programs have been adopted on a national scale. Bird has written many articles on safety and is a frequent speaker before safety, management, and other groups. He has been active in Red Cross water safety programs, on committees of NSC, ASSE, and Philadelphia Safety Council.

RAPID REDUCTION in frequency of disabling injuries occurred in America from 1926 to 1932. According to NSC records the average national disabling injury rate was reduced from 31.87 in 1926 to 12.46 disabling injuries per million man-hours worked during that period.

This was accomplished in only six short years and represents an approximate 60 per cent improvement. It is interesting and significant that during the next 20 years there was only a 38 per cent improvement. A study of more recent years reveals an even slower rate of improvement.

Careful analysis of these results indicates the earlier improvement was probably due largely to management's acceptance of responsibility for providing a safe working place through the primary areas of mechanical safeguarding and use of protective equipment.

Progressive industry today continues to accept its responsibilities in providing safe work places. This same industry recognizes a tremendous challenge to further improvement in safety programming lies in winning the minds of its workers to a controlled safety performance by developing keen safety awareness and safety consciousness.

We are familiar with the garden variety of accidents occuring weekly in our plants because of a lack of safety awareness. These mishaps range from men dropping objects on their toes and striking their fingers with tools to cutting their hands or injuring their eyes because of failure to wear proper protective equipment.

Many of these accidents can be prevented from recurring by sound engineering application. But actual repetitive experience is proving day by day that it is our communications on safety that must become more effective in producing desired results in accident control.

Whether promotional or training in nature, our efforts can be most sure of reaching safety goals if we attempt to use these principles in our communications:

1. Make sure it will attract employees' attention. Use appealing subjects and presentations highlighted with emphasis on color, size or eye-catching art.

2. Make every attempt to show what is desired. Best results come with working models, demonstrations, slides, movies, photographs or drawings.

3. Select words carefully. Avoid unnecessary ones. Remember, you hamper retention of meaningful words when you hide them in a maze of meaningless ones.

4. Give a reason for the communication. Whenever possible, make it personal. One of the deepest drives in human nature is the desire to be appreciated. We help satisfy this important ego need whenever we can let the man know we have his interest at heart.

5. Followup to make sure expected results are being attained or that changes are necessary.

Creating in people the desire to work safely and efficiently is largely determined by the degree with which we can persuade, influence or sell them on the principles of our promotion and training communications.

By application of these five principles we can be more certain of developing safety awareness that will prevent injuries caused because men . . . hadn't been told . . . didn't understand . . . didn't remember.

VITALIZE Your Safety Programs! ENLIST THE DISNEY SAFETY TEAM!



Using color, animation, music and humor, Walt Disney makes a major contribution to both on-the-job and off-the-job safety education.

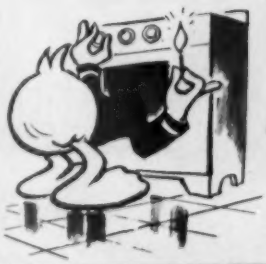
His unique ability to capture audiences of all ages — teaching most effectively as he entertains superbly — makes these films ideal for use in every type of safety program.

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"HOW TO HAVE AN ACCIDENT AT WORK"

FOR HOME SAFETY:



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FOR FAMILY SAFETY:



"I'M NO FOOL WITH A BICYCLE"

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BEFORE IT'S POSSIBLE to instruct someone, you must attract — and hold — his attention. This is where audio-visual aids come in and they're doing a real safety job in helping develop sound work habits and attitudes through impromptu programming.

Various standard devices find effective use in this approach to safety:

1. Employee manuals
2. Motion pictures and slidefilms
3. Bulletin boards and posters
4. Easels and flipcharts
5. Flannelboards
6. Projectors – overhead and opaque
7. Employee publications
8. Instruction cards

Many effective audio-visual aids are home-made. More elaborate items may be rented or purchased.

Employee Manuals

These booklets tell the employee what the company expects of him, also what he can expect of the company. Safe practices, work rules, group insurance, medical service, personal service facilities, and other details of employment are explained.

Manuals range from simple mimeographed pamphlets to elaborate illustrated books. Cartoons can give a friendly, informal tone to instruction and make rules less forbidding.

Films

Both motion pictures and slidefilms are valuable for training classes and meetings. Types of films include:

1. Strip films projecting individual frames, with the instructor adding the commentary.
2. Sound slidefilms using a similar strip, with disk or tape-recorded commentary.
3. Separate projection slides with either live voice or recordings.
4. Sound and silent movies.

Slidefilms can often be made from photographs taken on the job with amateur equipment. Color adds realism and attention value to slides and movies, but black and white pictures are useful for some subjects which do not lend themselves to color.

Movies require more expensive equipment and greater skill in their production but short amateur movies can often be used effectively.

Most motion pictures, however, will have to be obtained from outside sources. Films on many topics can be rented.

Projection equipment. Projectors for individual slides, slidefilms, and motion pictures, with and without sound equipment, are available in a wide range of prices. Satisfactory equipment can be obtained at a moderate cost.

Overhead projectors can be used in a lighted room. An instructor can draw or write with a grease pencil on a piece of acetate or film positive in front of him. He can point to any important phrase or part of a picture. He faces the audience while the image is projected through a lens onto the screen.

Opaque projectors are similar to the overhead projector, but can be used to reflect and enlarge drawings from books and similar sources. At least one company makes combination overhead and opaque projectors.

Screens are available in a variety of sizes and prices. The size of the meeting room will govern the choice. A beaded screen is more brilliant over a narrower viewing angle and is suitable for general use. A matte screen is better for shorter rooms where the audience is spread out.

Photography

A camera can provide much useful material for the safety program. Slides in color and in black and white add interest to safety meeting and training classes and provide a record of inspections. Enlarged prints for bulletin board and em-



Newcomers to hook-on-crane job learn what to expect when they begin handling big ones.



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- While these accidents usually occur at low speeds, they have resulted in fatalities and numerous personal injuries.
- Because of their frequency, backing accidents are also costly in terms of damaged docks and vehicles.
- Backing accidents have ruined many driver safety records because they are preventable.



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FILM	**LOOK, STOP BACKING ACCIDENTS** **16mm Black and white sound film** Viewing time: 10 minutes. In that short span of time you can dramatize the importance of backing safety, illustrate how to avoid backing, tell what to do when faced with certain choices and spell out how to back safety in all situations. An excellent film.
BOOKLET	An 8-page booklet that illustrates the five main rules of safe backing. It contains schematic drawings to illustrate each point and brief case histories of actual backing accidents taken from the files of the National Safety Council. Printed in two colors, page size 3¼" x 8".
POSTERS	Six colorful posters that once again repeat and reinforce the ideas viewed in the movie. One large poster (17"x23") sets the campaign theme and 5 other posters (8½"x 11½") deal with the 5 basic rules of safe backing.
DASH STICKERS	Add a touch of humor to the campaign and once again illustrate the important points of safe backing. These little billboards are used in the driver's cab of the vehicle to keep him reminded of the campaign while on the road.

Now . . . you can pinpoint a vigorous campaign against the irritating and costly backing accident. The NSC backing accident campaign is designed for a six-week period and can be conducted within the framework of your regular planned fleet accident prevention program. It focuses attention and interest on this single area of safety; providing the "know-how" on how to stop backing accidents. The film, *"LOOK, STOP BACKING ACCIDENTS,"* is used to spark the campaign and is then followed and supported by intensive use of the other campaign materials.

You can obtain complete information on this special interest campaign by sending for a new folder that describes all the available materials, lists prices and suggests campaign procedure.

SEND FOR YOUR FREE FOLDER NOW!



GREEN CROSS FOR SAFETY — NATIONAL SAFETY COUNCIL

NATIONAL SAFETY COUNCIL
425 N. Michigan Avenue • Chicago 11, Illinois

CIRCLE 218 ON READER CARD



"Is your Safety Program complete?"

To warn workers, select the proper READY MADE safety signs from thousands of proven wordings.

Send for NEW 4-color catalog today!

Ready Made SIGNS FOR SAFETY



Ready Made SIGN CO. INC. 115 WORTH STREET, NEW YORK 13, N. Y.

Dept. NS-3

—NEEDLESS COMPENSATION CAN BE ELIMINATED—

BRAY SAFETY TRAINING FILMS

furnish the basic information upon which can be built a Workers' Safety Education Program



HOW TO AVOID MUSCLE STRAINS

(16mm sd b/w 13 minutes)

Teaches correct lifting to reduce back and muscle injuries. Includes subject of HERNIA. Endorsed by AMA, Safety Councils, Gov't. Agencies, etc.

Rental, $6.00, 1 day. Sale, $60.00

THE DOCTOR EXAMINES YOUR HEART *(16mm sd b/w 11 min.)*
Shows importance of regular heart examination. Endorsed by Amer. Heart Assoc.
Rental, $3.50, 1 day Sale, $60.00

THE BILLION DOLLAR MALADY (COMMON COLD) *16mm sd b/w 16 min.*
Illustrates control and prevention of colds. Professionally endorsed. Rental, $3.50, 1 day. Sale, $75.00

GUARD YOUR HEART *(16mm sd b/w 27 min.)*
An executive learns through experience and his doctor how to work and live with his heart. Specially recommended by Amer. Heart Assoc. Rental, $10.00, 1 day. Sale, $125.00

For SOUTH and LATIN AMERICA—BRAY Safety Training Films with SPANISH narration

HOW TO AVOID MUSCLE STRAINS (see above)
IGNITION & SPARK PLUGS
FOR SAFETY SAKE
CAUSE FOR ALARM
DAY IN COURT
TIME TO STOP
FATAL SECONDS
OPERATION SURVIVAL

ACCIDENTS DON'T HAPPEN Series:
ORGANIZATION
MACHINES
HANDLING
FALLS
SAFE CLOTHING
SAFETY SUPERVISOR
EARLY HANDLING OF SPINAL INJURIES

(WRITE FOR DESCRIPTIVE FOLDER and PRICES to: Dept. SP-361)

BRAY STUDIOS, INC. 729 SEVENTH AVENUE NEW YORK 19, N. Y.

CIRCLE 219 ON READER CARD

ployee publication use are low in cost and easy to produce.

Several types of still cameras are available in a wide range of prices. These include:

35 mm. This versatile camera is a favorite with amateurs and is used by many professionals for industrial work in both color and black and white. Slides can be used in standard projectors and good black and white negatives can stand considerable enlargement. Cameras are available with a variety of lens and shutter equipment and accessories in a wide range of prices.

Twin-lens reflex. Negatives on No. 120 or 620 film, 2¼ x 2¼ in., make good enlargements in black and white. Color transparencies are highly effective on the screen but require special projectors.

Press camera. The 4 x 5 in. is the most popular size. Contact prints are large enough for many purposes. Equipment is rather bulky for amateur use.

Ten-second cameras. The Polaroid®-Land process produces finished prints 10 seconds after the shutter has been snapped. These are useful when a record is wanted promptly, as in inspections, and extra copies are not needed. Newer high-speed film has increased the usefulness of this camera.

Subminiatures. These cameras take negatives from 8 x 11 mm. to 12 x 17 mm. Photographic quality of prints is not equal to larger sizes and they will not stand much enenlargement. They are useful where small, inconspicuous equipment is desirable.

Simple cameras with fixed-focus lenses will take excellent pictures under favorable conditions but good industrial pictures usually require a more versatile camera which can be used under difficult lighting conditions.

Accessories. Flash equipment makes the photographer independent of outside light sources. Cameras of most types are available with flash synchronization.

Exposure meters, properly used,

are an aid to better pictures, particularly with color film.

Miniature cameras with fast lenses using fast film can take many pictures by available light where a flash might be undesirable.

Bulletin Boards

Bulletin boards in prominent locations are excellent media for official announcements and news as well as for safety information and reminders in the form of posters, charts, photographs, and exhibits of portective equipment.

In companies without employee publications, bulletin boards serve some functions of a newspaper.

Unimaginative or unsystematic use of boards impairs their effectiveness. Here are a few suggestions for enlivening displays.

1. Locate them where they will be seen (cafeterias, recreation rooms, elevator entrances, locker rooms, near time clocks or drinking fountains).
2. Change copy frequently — as often as every two days. Fresh displays attract more attention.
3. Keep copy brief. If possible, use less than 100 words for notices and news items.
4. Use large type, art, and color. Cartoons are especially popular.
5. Keep as near eye level as possible — about 63 in. from the floor.
6. Provide good illumination. Flashing lights attract attention and are sometimes used in nonproducing areas. They may be a distraction in work places.
7. Glass covers protect displays from dirt and defacement and prevent posting of unauthorized material.
8. Don't fill up boards too solidly with printed matter. Liven them up; don't overdo dignity.

Posters are visible evidences of a safety program. Unfortunately, some companies have depended on posters to carry the load and neglected such essential activities as guarding housekeeping and job instruction. If posters are not backed by sincere effort to improve working conditions, employees will have little respect for the safety program.

The value of posters is emphasized by the efforts of advertisers to acquire billboard space near factory gates. These locations are frequently used for large safety signboards where both employees and the public can get the message. Outdoor boards are made more effective by floodlighting.

A convenient size for a bulletin



CIRCLE 220 ON READER CARD

CIRCLE 221 ON READER CARD

PLAQUES • TROPHIES • EMBLEMS
INCENTIVE AWARDS



SS-10

TWO TONE Jewelers Bronze Etching with "Shield of Safety" in Bronze and Enameled Green. Genuine Walnut Shield — 10" x 10½".

SS-10 AWARD OF MERIT
SS-11 PLAIN RIBBON
SS-12 AWARD OF HONOR
SS-13 PLAIN RIBBON
NO SHIELD

$10.95 EACH



SAFE DRIVER AWARD

Sunray (Gold color) figure and plate. Genuine walnut base. Enamel "SAFETY" emblem Ht. 6".

$6.35 EACH

XPW4-3S





58SD		58NA
$ .95	Gold Plate	$ .92
1.35	Sterling Silver	1.30
1.50	Gold Filled	1.45
4.25	10K Gold	4.00

Set with synthetic Sapphires, Rubies, Emeralds, White Sapphires at $1.75 each additional. Available in all years.



1933 SERIES— Available in over 40 Stock Titles. 1¼" dia., hard glazed enamel, gold plated pin and safety lock catch. $10.50 per doz. (plus Fed. tax).

Write for complete catalog and "SHIELD OF SAFETY" circular.

WILLIAMS JEWELRY & MFG. CO.

Dept. NS-3 Chicago 3, Ill.
10 South Wabash Ave. CEntral 6-5018

board is 22 in. wide by 30 in. high.

Boards should be attractively painted and glass covered. Green, traditional safety color, is commonly used but other colors can be used effectively. One board in a workroom is usually sufficient but in lunch rooms or locker rooms several panels may be used effectively.

Displays of broken goggles and damaged safety shoes and hard hats can be interesting and convincing when accompanied by stories and pictures of the workers involved. But object lessons can become monotonous and it takes ingenuity to find fresh ways of presenting familiar subjects.

Sometimes a special display may be used to launch a campaign on a theme, such as eye protection or safety shoes.

Jumbo posters, 8½ x 11 ft., are often placed on boards in conspicuous locations where the employee cannot fail to see them when coming to work or leaving the plant. If they can be seen by the public passing the plant, they will also help to make a favorable impression.

Jumbo posters may be obtained from the National Safety Council on a monthly service basis. Billboards may be decorated with original art work, perhaps including a scoreboard for the plant's record of accident-free days.

Flipcharts

Flipcharts are helpful in conducting meetings. Examples of this type of material are the National Safety Council's *Safetygraphs,* each dealing with a specific topic. They are designed for use by foremen and others holding meetings with small groups.

Safetygraphs consist of drawings, cartoons, charts, and other illustrations printed on heavy paper and spiral-bound which fits into a folder that opens to form an easel. With the large illustration facing the audience, the instructor discusses the subject, using his own words or reading the suggested talk on the back of the illustration.

Flannelboards can be used effectively to present outlines of talks and illustrative material.

Employee Publications

Employee publications furnish an excellent medium for safety communications. These publications range from simple mimeographed bulletins to elaborately printed and illustrated magazines. Illustrated safety stories are regular features in many publications.

Most publications carry news of employee and company activities but some are strictly safety bulletins for employees, supervisors, and special groups.

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More Power to Your Words [Photography]; Norval Burch, Feb. 1953.

Good Medicine for Any Plant; D. H. Tilson, Feb. 1953.

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Visual Aids Section; June 1955.

New Life for Safety Meetings; Randell W. Lemke, July 1955.

Don't Overlook the Flannel Board; L. C. Smith, Sept. 1955.

Are Your Thoughts Getting Through? T. R. Nilsen, Oct. 1955.

Projecting Your Message; L. C. Smith, Jan. 1956.

Don't Get Into a Rut with Visuals; Robert K. Konikow. June 1956.

The Camera Sees and Remembers; Robert J. Gell and Earl R. Wallace, June 1956.

Your Friend the Editor, Irvin K. Weinman, June 1956.

Safety Communication: Media, Methods, Results; W. T. Browne, June 1957.

Plan Your Message, Pick Your Medium; L. C. Smith, June 1957.

So You're Showing a Safety Film; Sept. 1957.

Communicate with Imagination; June 1958.

Are You Teaching—Or Just Telling? L. C. Smith, June 1959.

You, Too, Can Make Safety Films; Glenn Griffin, Oct. 1959.

Tape Adds Wings to Words; May 1960.

Showmanship Sells 'Em; Sept. 1960.

Tells of Language Barrier in Indonesia



Most safety men attending the National Safety Council's Safety Training Institute come from the United States and Canada. But some travel halfway around the world to take the intensive one-week Fundamentals course at NSC headquarters in Chicago.

Haroen Al Rasjid (right) fire and safety supervisor at Caltex Pacific Oil Co.'s operations in Sumatra, Indonesia, was one of those who came from the other side of the world. In discussing safety work in Indonesia with Len Smith, NSC director of training, "Al" said the language barrier is one of the great problems in his country. In addition to the three main languages, there are more than 200 dialects that a safety man must cope with in getting his message across. And 40 per cent of the workers cannot read.

CIRCLE 223 ON READER CARD

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EMPLOYEE MOTIVATION KIT

Includes:

- SUCCESSFUL SUPERVISION
  MOTIVATION
  LINE-STAFF RELATIONS
  CASE STUDIES
- MULTI-COLOR DISPLAYS
  INJURY PREVENTION
  WASTE REDUCTION
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This valuable kit is yours without obligation. Simply fill out the coupon and mail it today.

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SAFETY FILMS
write or telephone

International Film Bureau
Inc.
332 S. Michigan
Chicago 4, Ill.
HA 7-4546



CIRCLE 222 ON READER CARD

CIRCLE 224 ON READER CARD



SAFETY EVERYWHERE ...all the time!

Since the *Safety Everywhere . . . all the time* campaign was announced by NSC in March, 1960 hundreds of firms have adopted it. Everywhere you go, you see the yellow diamond and black bulls-eye that is the emblem of the campaign. Why is the *Safety Everywhere* so widely used? Because it's a complete campaign—aimed at off and on job safety; because it's an integrated campaign—the film, the plant materials, and the employee distribution materials all tie together; and finally, because it's an effective campaign — it gives a lift to the safety program — creates employee interest. Plan to use this dynamic, colorful safety campaign in your organization for the coming year. Write for illustrated Brochure MS 280, it describes the safety materials available, lists prices and outlines the steps you should take to get your campaign underway.

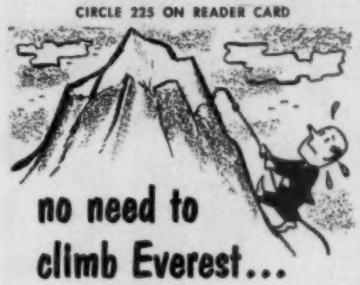
NATIONAL SAFETY COUNCIL
425 N. MICHIGAN AVE.
CHICAGO 11, ILL.



Support Safety Beyond Plant Walls

Industry meets its community obligations in accident prevention. Here, a driver for Schmidt's of Philadelphia answers queries on jaywalking. A newscaster for WFIL-TV asks the questions. The Philadelphia Chapter, Pennsylvania Motor Truck Association, arranged for this interview.

CIRCLE 225 ON READER CARD



no need to climb Everest...

... Just send for our latest catalog when you require awards and trophies that are safety stimulators and aid in maintaining a safety program.

This new catalog illustrating thousands of awards and trophies is probably the largest in-stock selection of safety campaign material assembled in a single catalog.

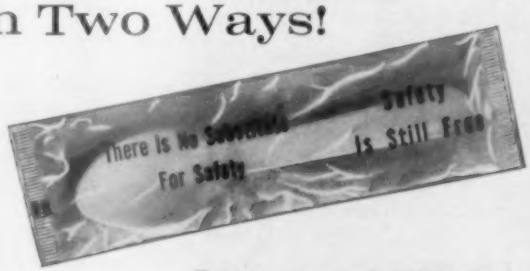
And yes, same day shipment of all trophies selected is standard ... you see, we are the manufacturers!

SEND FOR YOUR FREE SAFETY CATALOG, NOW!

EMBLEM & BADGE MFG. CO.
Box S
68 Pine St., Prov. 3, R. I., DExter 1-5444

This Sanitary Spoon Helps You Promote Safety In Two Ways!





Factory-wrapped OWD Ritespoon and OWD Ritefork provide an economical and effective medium for transmission of safety messages and slogans to plant personnel. Any message can be printed on the sanitary sealed wrapper in any color or colors desired. You also avoid a hazard to health by providing these sanitary wrapped eating utensils for in-plant feeding, push cart, coffee service, snack bars and cafeterias.

Many plants find that the small cost is a most productive investment in plant safety. Wrapped OWD Ritespoons are made of naturally pure Adirondack hardwood. They provide the true shape and complete utility of metal ware in hot and cold beverages and foods. Write for samples and data. Available locally from distributors everywhere.

OVAL WOOD DISH CORPORATION
Tupper Lake, N. Y.
The Oval Wood Dish Company of Canada, Ltd.
Industrial Center No. 5, Quebec, P. Q.

CIRCLE 230 ON READER CARD

PREVENT BACK INJURY!
***SHOW* THEM HOW**
TO LIFT THE *RIGHT* WAY



"LIFTY"

Lifting heavy objects the wrong way can cause hernias and severe back injuries. "Lifty," the animated training tool that really puts a point across, dramatically shows your workers just how such injuries are caused by incorrect lifting . . . and shows them how to lift the right way, with the legs instead of the back.
24" high, sturdy wooden construction. 2 models available; clear lacquer or in 3 colors.

TRAINING AIDS
235 Iroquois Road
Hillside, Illinois

CIRCLE 226 ON READER CARD

CIRCLE 227 ON READER CARD

the simplest most economical way to protect road crews and avoid accidents: use

WARNING SIGNS

TELESCOPING WARNING TRIPOD
PROVIDES HIGH/LOW LEVEL WARNING



Think how many ways you can use this portable, easy-to-use warning sign. Withstands 30 mph winds or more without added weights. Legs lock open for security, closed for safe handling. Upper column adjusted to selected height by knurled nut and collet. Heavy duty construction of malleable castings, steel and aluminum. Optional warning signs, flashing lights, vinyl flags with fluorescent colors available.

Height, extended, 10'6".

PORTABLE A-STAND



Here is an outstanding barricade, built for heavy duty and hard service. Easily carried; stored flat in collapsed position. Locks in open position.

TWO SIZES
Large, 24" x 24" sign
Junior, 18" x 18" sign.

MANHOLE BARRICADE



Best possible protection wherever pipes or cables are underground. Heavy steel pipe with welded joints: sleeves and hinges of seamless steel tubing. Red enamel finish. Approx. size: 42" high, 32" deep, 32" wide.

Send for latest Sign Catalog.

Metal Signs for every need

STANDARD SIGNS, INC.

3100 East 65th St. • Cleveland 27, Ohio

Survive With These Signs

But don't forget to maintain, inspect them

SIGNS are important to our survival. Wherever we go, we depend on these objects to teach us, guide us along our way, or to save us from hazard.

Desire for uniformity in shape, color, wording, and location of signs has led to adoption of standards by industry.

Color. According to American Standards Code Z35.1, *Specifications for Industrial Accident Prevention Signs,* characteristic colors for signs should be:

Red—danger.
Yellow—caution.
Green—safety instructions.
Black—directional signs, such as arrows at exits and stairways.

For informational signs any colors except red and yellow may be used.

Commercial signs conforming to specifications of the Code and covering a variety of messages for nearly every industrial situation are available and special signs can be made to order. Enameled metal, the most frequently used material, is resistant to rust and corrosion and is easy to keep clean.

Visibility is particularly important for warning signs. Special illumination may be necessary in poorly lighted areas.

Black and white, and black on yellow, are the most visible combinations. Other combinations are white on black; yellow on white; blue on white; white on blue.

Yellow is the most conspicuous color in daylight; red can be seen most readily by artificial light.

Red is universally accepted to denote danger or fire apparatus.

Lettering should be as large as possible, consistent with balance and legibility. Block letters generally are preferred for signs.

The height of capital letters should be about the same as the space between lines.

Tables of distances at which well-proportioned letters can be read by persons with normal vision under good lighting conditions are given in the American Standards Code Z35.1. This code also offers detailed specifications on construction of standard signs.

Danger signs should not be overworked. They should be restricted to such immediate and serious hazards as high-voltage equipment, toxic and corrosive chemicals, collision hazards, explosives. Employees should be warned of the importance of such signs.

Caution signs warn employees of potential hazards, such as improper use of elevators, cluttered aisles, and sparks from grinding wheels; or against unsafe practices such as oiling machinery in motion, smoking in forbidden areas, and operating machines without guards.

Other general types include safety instruction signs, which designate certain actions or practices; directional signs, and information signs.

Reflectorized signs are useful day or night. In darkness they stand out brightly under the beams of a flashlight. They are available in standard designs for warning, direction, and locating emergency equipment.

Warning tags come in a variety of stock subjects. They are attached to equipment in emergencies to warn others that men are working on machines, that a valve on a pipe line has been shut because of a leak, etc. They are also used on unsafe equipment which is to be removed from service.

Decals are miniature signs which can be attached permanently to machines, walls or other places where a message of warning, caution, or brief instruction is needed. They conform to standard specifications of design and color.

Signboards with changeable letters are available in small sizes suitable for departmental use and larger types which may be erected in conspicuous places near the plant entrance where they can be seen by both employees and the public.
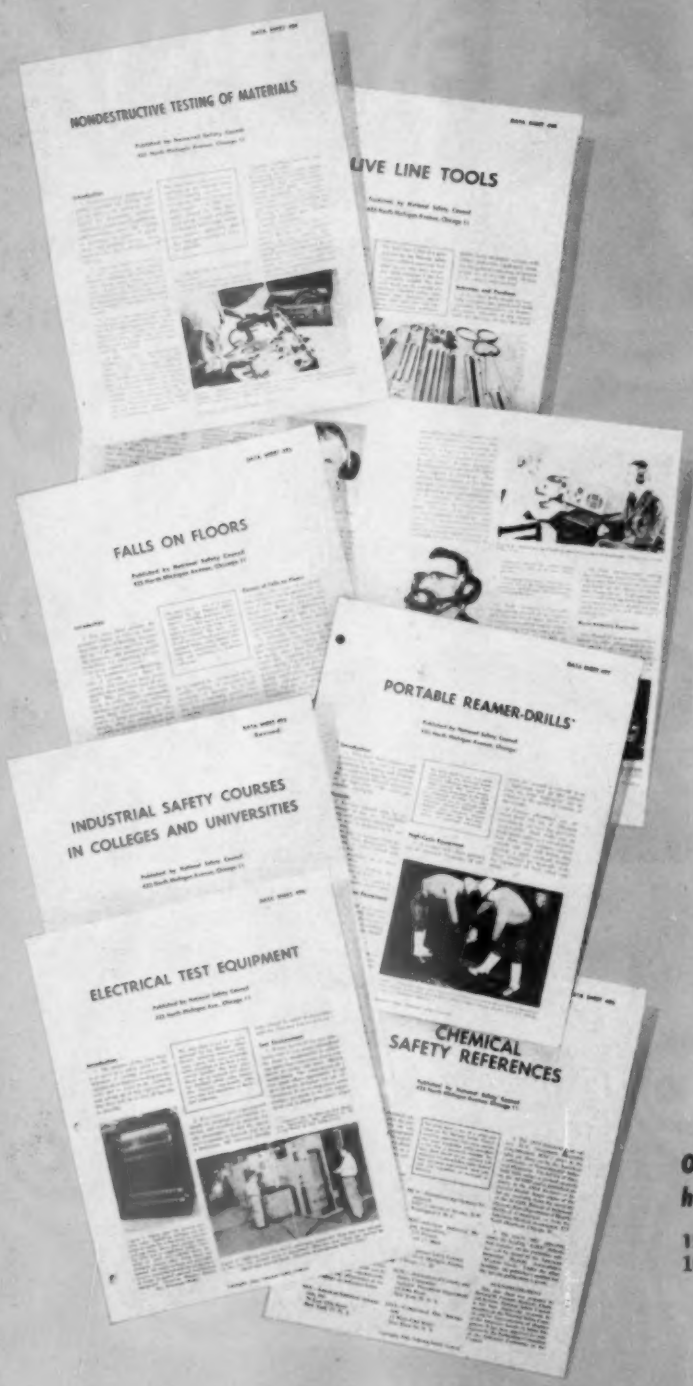
KEEPING

POSTED!



Watch this space each month for late news on NSC services. Use the handy Order Form to request sample copies of publications listed in this issue or to order safety merchandise.

MARCH 1961



Keep specific facts at your fingertips with

NSC INDUSTRIAL DATA SHEETS

Each technical safety problem selected for a data sheet is one on which little or no published information is available from any other source. They fill the gaps left by other references; and in most cases represent the only existing printed information on the particular problem they discuss.

The compact, reliable details of these data sheets represents the combined thinking and experience of men who have met the problems involved . . . safety specialists from Council member companies, staff safety engineers and veteran safety men from a large number of industries.

Sixteen of the most recent data sheets, published since January, 1960, are listed below. (There are over 250 Industrial Data Sheets available.)

486 Chemical Safety References
487 Warpers and Beamers
488 Nondestructive Testing of Materials
489 Isocyanates
490 Aircraft Turbine Engine Noise
491 Fire Prevention and Control on Construction Sites
492 Lining Tanks and Vessels with Rubber
493 Industrial Safety Courses in Colleges and Universities
494 Acetylene
495 Falls on Floors
496 Electrical Test Equipment
497 Portable Reamer Drills
498 Live Line Tools
499 Arsenic Inorganic Compounds

Order a supply for your safety library now. Use the handy order form on the fold-in page in this section.

123.04. Data Sheets, Each: 1—$.40; 10—$.33; 100—$.26; 1000—$.21.

NATIONAL SAFETY COUNCIL 425 N. MICHIGAN AVE., CHICAGO 11, ILLINOIS

New

POSTERS

MAY 1961

JUMBO POSTERS 3 ft. 6 in. x 10 ft.



MAY 1961

SAFETY BANNERS

11 ft. 8 in. x 9 ft. 11 in.





1910-A 8½" x 11½"



1876-A 8½" x 11½"



1812-B 17" x 23"



2035-B 17" x 23"



2066-B 17" x 23"



1797-A 8½" x 11½"



1880-A 8½" x 11½"



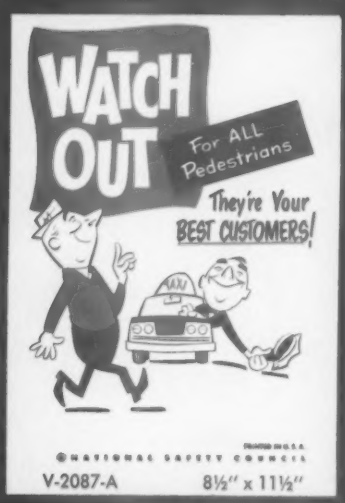
2023-A 8½" x 11½"



V-2089-A 8½" x 11½"



V-2088-B 17" x 23"



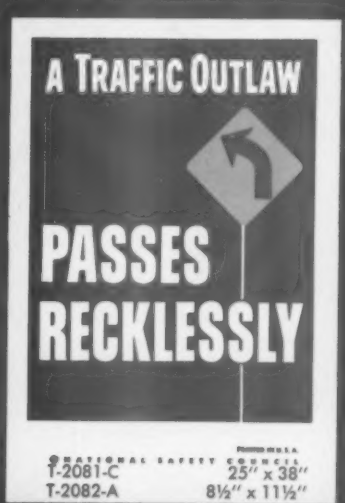
V-2087-A 8½" x 11½"



1888-A 8½" x 11½"



T-2083-B 17" x 23"



T-2081-C 25" x 38"
T-2082-A 8½" x 11½"

SEE FOLD IN PAGE FOR POSTER ORDER FORM



SEND FOR FREE SAMPLE COPIES

EMPLOYEE TRAINING

BOOKLETS

Employee education booklets are a basic part of your safety program. Several recent booklets are described below. Sample copies of these booklets may be obtained by circling the code number on the order form or they can be ordered in quantity for prices shown.

AFETY EVERYWHERE . . . ALL THE TIME!

series of 12 leaflets keyed to the dynamic theme of this special afety campaign. Each leaflet discusses safety as a family ctivity. 12 different topics are covered (see order form for ndividual stock nos. and titles). Printed in 3 colors, 3" x 6" in ze. these leaflets are ideal for reading racks, hand-outs and ailings.

RICES—Individual leaflets, any selection, each: 50—$.03; 0—$.025; 1000—$.022; 5000—$.017; 10,000—$.015. See order rm for subjects.

OOK! STOP BACKING ACCIDENTS

ells how to avoid backing, how to choose the least hazardous ay of backing, and illustrates the five main rules of safe back- g. It contains schematic drawings of the five basic rules and ief case histories of actual backing accidents.

rinted in two colors, this 8-page booklet is a professional iver's guide to safe backing.

OCK No. 294.10 — Cost per booklet: 10—$.13; 50—$.065; 0—$.055; 1000—$.045; 5000—$.038; 10,000—$.036.

CCIDENTS IN THE OFFICE

ightly colored and presented in an eye-appealing way, this w booklet will help alert your "white collar" staff to the mmon hazards found in their occupational environment. Accidents in the Office" fills a long-felt need. Eight pages, ¼" x 8". Two-color illustrations.

OCK NO. 195.50—Cost per booklet: 50—$.06; 500—$.05; 1000 $.045; 5000—$.043; 10,000—$.042; 20,000—$.04.

AT BELTS SAVE LIVES

his booklet tells the seat belt story, simply, clearly and con- ncingly. 8 pages, attractively illustrated, it should appeal to e better judgment of motor vehicle drivers who want to prove their chances of surviving accident crashes.

OCK No. 399.31 — Cost per booklet (minimum order 50 pies): 50—$.06; 500—$.05; 1,000—$.045; 5,000—$.04; 10,000 $.035; 20,000 — $.032; 50,000—$.029; 100,000—$.026; 500,000 $.023; 1,000,000—$.021.

E BIG PAYOFF

colorful 12 page booklet that uses cartoons to point out the lue of company safety programs. Can be effectively used to ild proper employee attitudes on safety.

OCK No. 192.16 — Cost per booklet (minimum order 50 pies): 50—$.09; 500—$.08; 1,000—$.07; 5,000—$.063; 10,000 $.058; 20,000—$.055.

POSTER PRICES*

SIZE	QUANTITIES				
	1	10	100	1000	5000
Suffix "A"		$.13	$.077	$.066	$.055
Suffix "B"		.25	.21	.17	.13
Suffix "C"	$.44	.33	.26	.24	.22

*NSC Members receive 10% discount on above prices. Quantity prices apply on a single shipment to one location. Please enclose check with orders less than $3.00. Prices subject to change without notice.

NOTE: New Safety Banner and Jumbo Poster are shown as a service to regular subscribers. Non-subscribers may obtain prices and information by using order form or writing council.

USE THIS CONVENIENT ORDER FORM TO PURCHASE OR OBTAIN FREE...



ORDER FORM

NATIONAL SAFETY COUNCIL

SAFETY MATERIALS

SHIP TO:

ORGANIZATION_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

TO ATTENTION OF_____

_____

DATA SHEETS

123.04 DATA SHEETS (any selection)
Each: 1—$.40; 10—$.33; 100—$.26; 1000—$.21

Sheet No.	486	487	488	489	490	491	492
Quantity							
Sheet No.	**493**	**494**	**495**	**496**	**497**	**498**	**499**
Quantity							

Quantity	Stock No.	Description
	229.53	FIVE MINUTE SAFETY TALKS FOR DRIVER SUPERVISORS—Book 3

SAFETY POSTERS

List quantity desired

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ABOUT THE AUTHOR

Donald S. Buck has gained a national reputation as a stimulating and sometimes controversial commentator and critic of current fleet accident prevention techniques. He has been concerned with driving safety for the past 27 years. He has been a state trooper, a fleet safety engineer, chief of safety for the U. S. Army Transportation Corps, and director of safety for the U. S. Continental Army Command. Many of his articles have appeared in Commercial Car Journal, and he has frequently addressed the National Safety Congress and various college and university groups.

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SECTION 13

PRODUCT AND SOURCE DIRECTORY

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ON THE pages that follow are listed over 600 safety products and the sources from which they are available. This section is your up-to-date guide to the safety equipment market. Here's how to use it:

To find the safety product you are interested in, check the Safety Products Index beginning on the next page. Products are listed alphabetically — Abrasives, Absorbents, etc. Under each product in the Index you'll find listed one or more companies that provide this product.

To find the source of the product you are interested in, turn to the Safety Product Sources section. This section gives the addresses of the companies listed under the product you're interested in. Companies are listed alphabetically and, in most cases, names and addresses of local sources (branch offices and distributors) are given.

If you are looking for a safety product that is not listed in this directory, write to READER SERVICE DEPARTMENT, *National Safety News.* Names of suppliers will be sent to you, if the product is commercially available.

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Aluminum Company of America
American Chain & Cable Co., Inc.
American Optical Co., Safety Products Div.
Minnesota Mining & Mfg. Co.
Norton Co.
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Safety First Supply Company
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Floridin Co.
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Halprin Supply Co.
Safety First Supply Company
Sperti Faraday, Inc.

Alarms, Carbon Monoxide

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Union Industrial Equip. Corp.

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Alarms, Intrusion

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Wilkins Co., Inc., The
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Hynson, Westcott & Dunning, Inc.
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Kip, Inc.
Medical Supply Co.
Mine Safety Appliances Co.
National Mine Service Co.
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Safety First Supply Company

Anti-Skid Eyeglass Tabs

Dorsay Products

Aprons

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Aljay Mfg. Co., Inc.
Allied Glove Corp.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Associated Bag & Apron Co.
Boyer Campbell Div. White Sewing Machine Co.
Buhrke, R. H., Co.
Charleston Rubber Co.
Chicago Eye Shield Co.
David's Gloves, Inc.

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Fabriko, Inc.
Fashion Seal Uniforms
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Fyrepel Products, Inc.
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Herculite Protective Fabrics
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Raco Products, Division of Robin W. Adair Co., Inc.
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Standard Safety Equipment Co.
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Pulmosan Safety Equip. Corp.
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Morse Manufacturing Co., Inc.
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Sterling-Fleischman Co.
Yale & Towne Mfg. Co., The

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See SAFETY PRODUCTS SOURCES for addresses

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Fisher Scientific Co.
Frommelt Industries Inc.
Halperin, A. E., Co., Inc.
Herculite Protective Fabrics
Industrial Gloves Co.
Karel First Aid Supply Co.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Singer Glove Manufacturing Co.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Wheeler Protective Apparel, Inc.

Blankets, Linemen's Plastic

Aljay Mfg. Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Herculite Protective Fabrics
Plastimayd Corporation
Safety Clothing and Equipment Co.
Safety First Supply Company

Blankets, Linemen's Rubber

Boyer Campbell Div. White Sewing Machine Co.
Brenton Equip. Co.
Bridgeport Industrial Products, Inc.
Charleston Rubber Co.
Goodall Rubber Co.
Herculite Protective Fabrics
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Salisbury, W. H., & Co.
Standard Glove Co.
Surety Rubber Co.

Blankets, Wool Safety

Advance Glove Mfg. Co.
American Allsafe Co., Inc.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Cotton Goods Mfg. Co.
Davis Emergency Equip. Co., Inc.
Frommelt Industries Inc.
Industrial Gloves Co.
Karel First Aid Supply Co.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Singer Glove Manufacturing Co.
Standard Glove Co.
Wheeler Protective Apparel, Inc.
Woolrich Woolen Mills

Blast Recorder

Geotechnical Corp., The

Blockers, Mine Car

Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Blockers, Railroad Car

Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Blowers, Hose Mask

Acme Protection Equip. Co.
Davis Emergency Equip. Co., Inc.
Halprin Supply Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Blowers, Portable, Electric

Buffalo Forge Co.
Coppus Engineering Corp.
DeBothezat Fans Div., American Machine and Metals, Inc.
Halprin Supply Co.
Handling Devices Co., Inc.
Hillyard Chemical Co.
Mine Safety Appliances Co.
Morrison-Pelsue Co.
Multi-Clean Products, Inc.
Super Vacuum Mfg. Co.

Blowers, Ventilating

Buffalo Forge Co.
Burt Manufacturing Co., The
Coppus Engineering Corp.
DeBothezat Fans Div., American Machine and Metals, Inc.
Halprin Supply Co.
Handling Devices Co., Inc.
Mine Safety Appliances Co.
Morrison-Pelsue Co.
Super Vacuum Mfg. Co.

Boards, Changeable Letter

New Jersey Safety Equipment Co.
Safety First Supply Company
Standard Glove Co.
Stephen-William Co.
Whitney, L. A., Assoc., Inc.

Books on Safety

Oakite Products, Inc.
Willson Products Div., Ray-O-Vac Co.

Boot Liners

Boyer Campbell Div. White Sewing Machine Co.
Jomac Inc.
Mine Safety Appliances Co.
Safety First Supply Company
Standard Glove Co.

Boots, Linemen's

Bashlin, W. H., Co.
Bronson Shoe Co.
Dorsey, John E., Co.
Goodall Rubber Co.
Goodrich, B. F. Footwear Products
Hood Rubber Products
Midwest Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Salisbury, W. H., & Co.
Standard Glove Co.

Boots, Neoprene

Allied Glove Corp.
Beacon Falls Rubber Footwear
Bronson Shoe Co.
Dorsey, John E., Co.
Dunn Products
Goodall Rubber Co.
Goodrich, B. F. Footwear Products
Hood Rubber Products
Iron Age Safety Shoe Div., H. Childs & Co., Inc.
Midwest Glove Co., Inc.
New Jersey Safety Equipment Co.
Record Industrial Co.
Reece Wooden Sole Shoe Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Snyder, M. L., & Son, Inc.
Safety First Supply Company
Standard Glove Co.
Standard Safety Equipment Co.
Tingley Rubber Corp.
Wash-Rite Co., Inc.

Boots, Rubber

Allied Glove Corp.
American LaFrance
Beacon Falls Rubber Footwear
David's Gloves, Inc.
Dorsey, John E., Co.
Dunn Products
Goodall Rubber Co.
Goodrich, B. F. Footwear Products
Hood Rubber Products
Iron Age Safety Shoe Div., H. Childs & Co., Inc.
Midwest Glove Co., Inc.
Record Industrial Co.
Ripple Sole Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sawyer-Tower, Inc.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Standard Safety Equipment Co.
Tingley Rubber Corp.
United States Rubber Co.
Wash-Rite Co., Inc.

Boots, Safety Toe

Beacon Falls Rubber Footwear
Bronson Shoe Co.
Dunn Products
Fyrepel Products, Inc.
Goodall Rubber Co.
Goodrich, B. F. Footwear Products
Haus of Krause
Hood Rubber Products
Iron Age Safety Shoe Div., H. Childs & Co., Inc.
Dorsey, John E., Co.
Midwest Glove Co., Inc.
Record Industrial Co.
Reece Wooden Sole Shoe Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Shoe Co., Inc.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Wash-Rite Co., Inc.
Wolverine Shoe & Tanning Corp.

Boots, Wooden Sole

Goodall Rubber Co.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
New Jersey Safety Equipment Co.
Record Industrial Co.
Reece Wooden Sole Shoe Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Snyder, M. L., & Son, Inc.

Bottle and Can Crushers

New Jersey Safety Equipment Co.
Vis-O-Lite Co., Inc., The

Bottle Carriers

Henson & Assoc.
Fisher Scientific Co.
Morse Manufacturing Co., Inc.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Breathing Apparatus, Air Supplied

Acme Protection Equip. Co.
American LaFrance
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Davis Emergency Equip. Co., Inc.
Draeger Oxygen App. Corp.
Fibre Metal Products Co., The
Fluid Power Inc.
Fyn-Fyter Co., The
Fyrepel Products, Inc.
Globe Industries, Inc., Special Products Division
Halprin Supply Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Scott Aviation Corp.
Standard Glove Co.
Willson Industrial Safety Equip.

Bricks, Lead, Interlocking

Technical Associates

Brooms, Fire Fighting

Halprin Supply Co.
Rochester Fire Equip. Co.
Safety First Supply Company

Buckets, Elevator

Link-Belt Co.

Buckets, Hoisting

Beaver-Advance Corporation
Downs Crane & Hoist Co.
Dravo Corp.

Buckets, Rubber

Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
General Scientific Equipment Co.
Goodall Rubber Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Bulletin Boards

Bridgeport Industrial Products, Inc.
Davenport, A. C. & Son, Inc.
Draeger Oxygen App. Corp.
Elliott Service Co., Inc.
General Scientific Equipment Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Safety First Supply Company
Standard Glove Co.
Stephen-William Co.
Wilkie Optical, Inc.

See *SAFETY PRODUCTS SOURCES for addresses*

Safety Products Index

Burners, Gas

Coppus Engineering Corp.
Prenco Mfg. Co.
Robbins & Myers, Inc.

Burn Ointments, Sprays

American Optical Co., Safety Products Div.
Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
General Scientific Equipment Co.
Halperin, A. E., Co., Inc.
Halprin Supply Co.
Industrial Aids Co.
Karel First Aid Supply Co.
Kip, Inc.
Medical Supply Co.
Mine Safety Appliances Co.
National Mine Service Co.
Pac-Kit Safety Equipment Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Cabinets, Towels

Hillyard Chemical Co.
Huntington Laboratories, Inc.
Institute of Industrial Launderers
Rochester Safety Equip. Co., Inc.
West Chemical Products, Inc.

Cable Wire

American Chain & Cable Co., Inc.
Aluminum Company of America
Jones & Laughlin Steel Corp.
National Mine Service Co.
Pennsylvania Sling Co.
Upson Walton Co.

Cans, Safety

Boyer Campbell Div. White Sewing Machine Co.
Cotton Goods Mfg. Co.
Eagle Manufacturing Co.
Fyr-Fyter Co., The
General Fire Extinguisher Corp.
General Scientific Equipment Co.
Genter, C. D., Co.
Halprin Supply Co.
Justrite Mfg. Co.
New Jersey Safety Equipment Co.
Protectoseal Co., The
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.
Witt Cornice Co., The

Canvas, Fireproofed

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
American Allsafe Co., Inc.
Associated Bag & Apron Co.
Burke, R. H., Co.
Fromnelt Industries Inc.
Industrial Gloves Co.
Kimball Safety Prod. Co.
Lynrus Finishing Co., Inc.
Midwest Glove Co., Inc.
New Jersey Safety Equipment Co.
Plasco Safety Products Co.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Singer Glove Manufacturing Co.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.

Caps, Skull

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
Associated Bag & Apron Co.
Boyer Campbell Div. White Sewing Machine Co.
Fashion Seal Uniforms
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
National Mine Service Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Willson Industrial Safety Equip.

Caps, Women's

Advance Glove Mfg. Co.
Associated Bag & Apron Co.
Boyer Campbell Div. White Sewing Machine Co.
Chic Maid Knitting Mills, Inc.
Fashion Seal Uniforms
General Scientific Equipment Co.
Kennedy-Ingalls Inc.
Milburn Co.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Safety Equipment Co.
United States Rubber Co.
Workion, Inc.

Carboy Draines

Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
General Scientific Equipment Co.
Morse Manufacturing Co., Inc.
New Jersey Safety Equipment Co.
Nutting Truck and Caster Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Thompson Mfg. Co.

Carboy, Plastic

General Scientific Equipment Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Carboy, Tilter

Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Fisher Scientific Co.
General Scientific Equipment Co.
Morse Manufacturing Co., Inc.
New Jersey Safety Equipment Co.
Nutting Truck and Caster Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.
Sterling-Fleischman Co.
Thompson Mfg. Co.

Carboy Truck

Boyer Campbell Div. White Sewing Machine Co.
Fisher Scientific Co.
General Scientific Equipment Co.
Morse Manufacturing Co., Inc.
New Jersey Safety Equipment Co.
Nutting Truck and Caster Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.
Sterling-Fleischman Co.
Thompson Mfg. Co.

Car Door Opener

Boyer Campbell Div. White Sewing Machine Co.
New Jersey Safety Equipment Co.
Nolan Co., The
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Car, Hopper Closer

Boyer Campbell Div. White Sewing Machine Co.
New Jersey Safety Equipment Co.
Safety First Supply Company

Car, Spotters

Aldon Company, The
Link-Belt Co.

Carriers, Cylinders

Fairbanks Co., The
Hamilton Caster & Mfg. Co., The
New Jersey Safety Equipment Co.
Nutting Truck and Caster Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Sterling-Fleischman Co.

Carriers, Drum and Barrel

Boyer Campbell Div. White Sewing Machine Co.
Fairbanks Co., The
Morse Manufacturing Co., Inc.
New Jersey Safety Equipment Co.
Nutting Truck and Caster Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Sterling-Fleischman Co.

Carriers, Magnetic

New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.

Carton Openers

Rochester Safety Equip. Co., Inc.
Flash Mfg. Co.

Cases, Spectacle, Goggle and Sun Glasses

American Optical Co., Safety Products Div.
Bausch & Lomb Inc.
Boyer Campbell Div. White Sewing Machine Co.
Chicago Eye Shield Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
Opticase Co., The
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Sellstrom Manufacturing Co.
Standard Glove Co.
United States Safety Service Co.
Wilkie Optical, Inc.
Willson Industrial Safety Equip.
Willson Products Div., Ray-O-Vac Co.

Chains, Chain Drives

American Chain & Cable Co., Inc.
Campbell Chain Co.
Columbus McKinnon Chain Div., Columbus McKinnon Corp.
Link-Belt Co.
McKay Co., The
Pennsylvania Sling Co.
Taylor, S. G., Chain Co., Inc.

Chains, Coil

American Chain & Cable Co., Inc.
Campbell Chain Co.
Canton Manufacturing Co., The
Columbus McKinnon Chain Div., Columbus McKinnon Corp.
McKay Co., The
Taylor, S. G., Chain Co., Inc.

Chains, Magnetic

Campbell Chain Co.
McKay Co., The
Taylor, S. G., Chain Co., Inc.

Chains, Sling

American Chain & Cable Co., Inc.
Boyer Campbell Div. White Sewing Machine Co.
Downs Crane & Hoist Co.
Campbell Chain Co.
Columbus McKinnon Chain Div., Columbus McKinnon Corp.
Jones & Laughlin Steel Corp.
McKay Co., The
Merrill Brothers
Pennsylvania Sling Co.
Taylor, S. G., Chain Co., Inc.

Chains, Spark Resisting

Campbell Chain Co.
McKay Co., The
Taylor, S. G., Chain Co., Inc.

Chairs, Safety Bosunsein

Campbell Chain Co.
Rochester Safety Equip. Co., Inc.
Rose Mfg. Co.

Chisel Grips

Boyer Campbell Div. White Sewing Machine Co.
Rochester Safety Equip. Co., Inc.
Rose Mfg. Co.
Safety First Supply Company
Tool & Manufacturing Co., Inc., The

Chucks, Wheel

Aldon Company, The
Bridgeport Industrial Products, Inc.
Calumet Steel Castings
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Clamps

Genter, C. D., Co.
Renfroe, J. C., & Sons, Inc.

Clamps, Cable

Broderick & Bascom Rope Co.
Crosby-Laughlin Division, American Hoist & Derrick Co.
Newco Mfg. Co., Inc.
New Jersey Safety Equipment Co
Pennsylvania Sling Co.

Clamps, Plate Lifting

Downs Crane & Hoist Co.
Merrill Brothers
New Jersey Safety Equipment Co.
Pennsylvania Sling Co.
Safety First Supply Company

Clamps, Rail

Dravo Corp.
New Jersey Safety Equipment Co.
Safety First Supply Company

Clamps, Sockets and Eyebolts

Genter, C. D., Co.

Clamps, Wire Rope

Bethlehem Steel Co.
Boyer Campbell Div. White Sewing Machine Co.
Canton Manufacturing Co., The
Crosby-Laughlin Division, American Hoist & Derrick Co.
Jones & Laughlin Steel Corp.
Macwhyte Wire Rope Company
National Mine Service Co.
New Jersey Safety Equipment Co.
Newco Mfg. Co., Inc.
Pennsylvania Sling Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Union Wire Rope, Armco Steel Corp.
Upson Walton Co.

Clamps, Wood

Charleston Rubber Co.

Cleaning Compounds or Solvents

Chem Industrial Co., The
Dolge, C. B., Co.
Dow Chemical Co.

See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Du Pont De Nemours, E. I., & Co., Inc.
Fine Organics, Inc.
Finnell System, Inc.
Graymills Corp.
Hillyard Chemical Co.
Horizon Industries
Houghton, E. F., & Co.
Huntington Laboratories, Inc.
Johnson's Wax
Kelite Corp.
Legge, Walter G., Co., Inc.
Magnus Chemical Co., Inc.
Masury-Young Co.
Multi-Clean Products, Inc.
Oakite Products, Inc.
Packwood, G. H., Mfg. Co.
Penetone Co., The
Practical Mfg. Co.
Speco, Inc.
Suburban Products Co. of Pa.
Rochester Safety Equip. Co., Inc.
Turco Products, Inc.
West Chemical Products, Inc.
Wyandotte Chemicals Corp.

Cleaning Machines, Floor

American Floor Machine Co., Div. of American-Lincoln Corp.
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Clarke Floor Machine Co.
Doyle Vacuum Cleaner Co.
Finnell System, Inc.
Franklin Research Co.
Handling Devices Co., Inc.
Hild Floor Machine Co., Inc.
Hillyard Chemical Co.
Holt Mfg. Co.
Huntington Laboratories, Inc.
Johnson's Wax
Masury-Young Co.
National Chemsearch Corp.
Tennant, G. H., Co.
West Chemical Products, Inc.

Cleaning Tissues, Lens

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Carhoff Co.
Dow Corning Corp.
Eastern Safety Equip. Co., Inc.
General Scientific Equipment Co
Halperin, A. E., Co., Inc.
Karel First Aid Supply Co.
Kimball Safety Prod. Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Silicone Paper Co. of America Inc., The
Standard Glove Co.
Standard Safety Equipment Co.
United States Safety Service Co.
Wilkie Optical, Inc.
Wilkins Co., Inc., The

Climbers, Linemen's

Bashlin, W. H., Co.
Boyer Campbell Div. White Sewing Machine Co.
Klein, Mathias, & Sons, Inc.
Miller Equip. Co., Inc.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Cloth, Asbestos

Advance Glove Mfg. Co.
Aljay Mfg. Co.
Allied Glove Corp.
Cotton Goods Mfg. Co.
Dunn Products
Flash Shield Products Co.
Frommelt Industries Inc.
Industrial Gloves Co.
Johns-Manville Corporation
Karel First Aid Supply Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Pendergast, Albert W., Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co
Safety First Supply Company
Sager Glove Corp., The
United States Rubber Co.
Wheeler Protective Apparel, Inc.

Cloth, Coated, Safety

Advance Glove Mfg. Co.
Allied Glove Corp.
Charleston Rubber Co.
Cordo Chemical Corp.
Flash Shield Products Co.
Frommelt Industries Inc.
Herculite Protective Fabrics
Industrial Gloves Co.
Jomac Inc.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
United States Rubber Co.
Wheeler Protective Apparel, Inc.

Clothing, Acid Resistant

Adair, Robin W., Co., Inc.
Advance Glove Mfg. Co.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Charleston Rubber Co.
Cordo Chemical Corp.
Dunn Products
Fashion Seal Uniforms
General Scientific Equipment Co.
Goodall Rubber Co.
Herculite Protective Fabrics
Industrial Gloves Co.
Johns-Manville Corporation
Jomac Inc.
Kennedy-Ingalls Inc.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pilasco Safety Products Co.
Pulmosan Safety Equip. Corp.
Raco Products, Division of Robin W. Adair Co., Inc.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Sawyer-Tower, Inc.
Setlow, M., & Son, Inc.
Singer Glove Manufacturing Co.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Standard Safety Equipment Co.
Union Industrial Equip. Corp.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.
Woolrich Woolen Mills
Workton, Inc.

Clothing, Aluminized

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Cordo Chemical Corp.
Dunn Products
Fyrepel Products, Inc.
General Scientific Equipment Co.
Halprin Supply Co.
Industrial Gloves Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment
Safety First Supply Company
Sager Glove Corp., The
Singer Glove Manufacturing Co.
Standard Glove Co.
Wheeler Protective Apparel, Inc.

Clothing, Fireproofed

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
American Allsafe Co., Inc.
American LaFrance
American Optical Co., Safety Products Div.
Associated Bag & Apron Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Dunn Products
General Scientific Equipment Co.
Herculite Protective Fabrics
Industrial Gloves Co.
Institute of Industrial Launderers
Johns-Manville Corporation
Kennedy-Ingalls Inc.
Mine Safety Appliances Co.
Kimball Safety Prod. Co.
Lynrus Finishing Co., Inc.
Midwest Glove Co., Inc.
Minnesota Mining & Mfg. Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Pilasco Safety Products Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Setlow, M., & Son, Inc.
Singer Glove Manufacturing Co.
Standard Glove Co.
Wamsutta-Pacific Industrial Div., M. Lowenstein & Sons, Inc.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.

Clothing, Industrial

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Boston Fairs Rubber Footwear
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Dunn Products
General Scientific Equipment Co.
Fashion Seal Uniforms
Goodall Rubber Co.
Herculite Protective Fabrics
Industrial Gloves Co.
Institute of Industrial Launderers
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pilasco Safety Products Co.
Plastimayd Corporation
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Raco Products, Division of Robin W. Adair Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Standard Glove Co.
Sawyer-Tower, Inc.
Scovill Mfg. Co.
Setlow, M., & Son, Inc.
Snyder, M. L., & Son, Inc.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.
Wilkie Optical, Inc.
Woolrich Woolen Mills

Clothing, Lead Lined

Advance Glove Mfg. Co.
Allied Glove Corp.
Charleston Rubber Co.
Midwest Glove Co., Inc.
New Jersey Safety Equipment Co.
Union Industrial Equip. Corp.

Clothing, Leather

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
Allied Glove Corp.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
General Scientific Equipment Co.
Industrial Gloves Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Pilasco Safety Products Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Singer Glove Manufacturing Co.
Standard Glove Co.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.

Clothing, Linemen's

Aljay Mfg. Co., Inc.
American Optical Co., Safety Products Div.
Bashlin, W. H., Co.
Dorsey, John E., Co.
Goodall Rubber Co.
Herculite Protective Fabrics
Jomac Inc.
Kennedy-Ingalls Inc.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Plastimayd Corporation
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Salisbury, W. H., & Co.
Standard Glove Co.
Sawyer-Tower, Inc.
Wheeler Protective Apparel, Inc.
Woolrich Woolen Mills

Clothing, Lint-free

Adair, Robin W., Co., Inc.
Bridgeport Industrial Products, Inc.
Industrial Gloves Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pilasco Safety Products Co.
Raco Products, Division of Robin W. Adair Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Sager Glove Corp., The
Standard Glove Co.
Union Industrial Equip. Corp.
Workton, Inc.

See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Clothing, Nuclear Radiation

Advance Glove Mfg. Co.
Allied Glove Corp.
Bridgeport Industrial Products, Inc.
Defense Apparel
Dunn Products
Industrial Gloves Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Safety Clothing and Equipment Co.
Sager Glove Corp., The
Singer Glove Manufacturing Co.
Standard Glove Co.
Union Industrial Equip. Corp.

Clothing, Plastic

Advance Glove Mfg. Co.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Associated Bag & Apron Co.
Beacon Falls Rubber Footwear
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Charleston Rubber Co.
Cordo Chemical Corp.
Davis Emergency Equip. Co., Inc.
Erell Manufacturing Co.
General Scientific Equipment Co.
Goodall Rubber Co.
Herculite Protective Fabrics
Jomac Inc.
Kennedy-Ingalls Inc.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Milburn Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Plasco Safety Products Co.
Plastimayd Corporation
Pulmosan Safety Equip. Corp.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Singer Glove Manufacturing Co.
Snyder, M.L., & Son, Inc.
Standard Glove Co.
Standard Safety Equipment Co.
United States Rubber Co.
Wash-Rite Co., Inc.

Clothing, Protective

Advance Glove Mfg. Co.
Air Reduction Sales Co.
Aljay Mfg. Co., Inc.
Allied Glove Corp.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Charleston Rubber Co.
Dunn Products
Ellwood Safety Appliance Co.
Dorsey, John E., Co.
Frommelt Industries Inc.
Fyr-Fyter Co., The
General Scientific Equipment Co.
Goodall Rubber Co.
Halprin Supply Co.
Herculite Protective Fabrics
Industrial Gloves Co.
Johns-Manville Corporation
Jomac Inc.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Milburn Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Plasco Safety Products Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Sawyer-Tower, Inc.
Snyder, M.L., & Son, Inc.
Standard Glove Co.
Standard Safety Equipment Co.
United States Rubber Co.
Wamsutta-Pacific Industrial Div., M. Lowenstein & Sons, Inc.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.
Woolrich Woolen Mills

Clothing, Rubber

Advance Glove Mfg. Co.
Beacon Falls Rubber Footwear
Boyer Campbell Div. White Sewing Machine Co.
Charleston Rubber Co.
Dorsey, John E., Co.
Dunn Products
General Scientific Equipment Co.
Goodall Rubber Co.
Jomac Inc.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Plasco Safety Products Co.
Pulmosan Safety Equip. Corp.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Salisbury, W. H., & Co.
Sawyer-Tower, Inc.
Snyder, M.L., & Son, Inc.
Standard Glove Co.
United States Rubber Co.
Wash-Rite Co., Inc.
Wilkie Optical, Inc.

Clothing, Static-free

Bridgeport Industrial Products, Inc.
Herculite Protective Fabrics
Industrial Gloves Co.
Jomac Inc.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Racine Glove Co., Inc.
Record Industrial Co.
Safety Clothing and Equipment Co.
Sager Glove Corp., The
Union Industrial Equip. Corp.
Workton, Inc.

Clothing, Weatherproof

American Optical Co., Safety Products Div.
Beacon Falls Rubber Footwear
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Dunn Products
Dorsey, John E., Co.
Goodall Rubber Co.
Herculite Protective Fabrics
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Plasco Safety Products Co.
Plastimayd Corporation
Record Industrial Co.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sawyer-Tower, Inc.
Snyder, M.L., & Son, Inc.
Standard Glove Co.
United States Rubber Co.
Woolrich Woolen Mills

Clothing, Women Workers'

Advance Glove Mfg. Co.
Charleston Rubber Co.
Institute of Industrial Launderers
Kennedy-Ingalls Inc.
Midwest Glove Co., Inc.
Milburn Co.
Mine Safety Appliances Co.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Workton, Inc.

Coats, Radiation

Controls for Radiation, Inc.
Herculite Protective Fabrics
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Tracerlab Inc.

Communications, In-Plant

Holmin, W. A., Corp.
Kaar Engineering Corp.
New Jersey Safety Equipment Co.
Notifier Corp.

Compounds, Rust Preventive

Chem Industrial Co., The
Du Pont De Nemours, E. I., & Co., Inc.
Holt Mfg. Co.
Johnson's Wax
Magnus Chemical Co., Inc.
Oakite Products, Inc.
Packwood, G. H., Mfg. Co.
Penetone Co., The
Speco, Inc.
Tect, Inc.
Wyandotte Chemicals Corp.

Compounds, Sweeping

Azrock Floor Products
B. F. Goodrich Flooring Products
Hild Floor Machine Co., Inc.
Hillyard Chemical Co.
Huntington Laboratories, Inc.
Oakite Products, Inc.
West Chemical Products, Inc.

Compressed Air Gun

Nielsen, E. V.

Conductive Floor Tester

Conductive Hospital Accessories Corp.

Connectors, Cable

Aluminum Company of America
Jackson Prod., Air Reduction Sales Co., Div. of Air Reduction Co., Inc.
Joy Mfg. Co., Electrical Prod. Div.
Macwhyte Wire Rope Company

Connectors, Electrical

Aluminum Company of America
Chance, A. B., Co.
Joy Mfg. Co., Electrical Prod. Div.
Ericson Manufacturing Co., The
Minnesota Mining and Mfg. Co.
Safety Plug Lock Corporation

Connectors, Wire Rope

Bethlehem Steel Co.
Macwhyte Wire Rope Company

Containers, Explosive Liquid

Halprin Supply Co.
New Jersey Safety Equipment Co.
Safety First Supply Company

Containers, Lead

Atomic Accessories, Inc.
Kahl Scientific Instrument Corp.
Radiation Counter Laboratories, Inc.
Technical Associates
Nuclear Measurements Corp.
Tracerlab Inc.

Conveyors

Hytroll Conveyor Company, Inc.
Link-Belt Co.
M-B Corporation
Nichols Engineering Company, The
United States Rubber Co.

Cords, Electric

Ideas, Inc.
Okonite Co., The
Plastic Wire & Cable Corp., The
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Cords, Extension

Ericson Manufacturing Co., The
Genter, C. D., Co.
Plastic Wire & Cable Corp., The
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Skill Corp.

Cots

Davis Emergency Equip. Co., Inc.
Ferno Mfg. Co.
General Scientific Equipment Co.
Halperin, A. E., Co., Inc.
Karel First Aid Supply Co.
Mine Safety Appliances Co.
Modern First Aid Necessities Co.
National Mine Service Co.
Rochester Safety Equip. Co., Inc.
Standard Glove Co.
Safety First Supply Company

Cots, Finger

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
David's Gloves, Inc.
Davis Emergency Equip. Co., Inc.
Dunn Products
Fisher Scientific Co.
General Scientific Equipment Co.
Industrial Gloves Co.
Karel First Aid Supply Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Plasco Safety Products Co.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Singer Glove Manufacturing Co.
Snyder, M.L., & Son, Inc.
Standard Glove Co.
Standard Safety Equipment Co.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.

Cover Lens

American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Chicago Eye Shield Co.
Dockson Corp.
Eastern Safety Equip. Co., Inc.
Fendall Co.
Fibre Metal Products Co., The
General Scientific Equipment Co.
Jackson Prod., Air Reduction Sales Co., Div. of Air Reduction Co., Inc.
Kedman Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
Pendergast, Albert W., Safety Equipment Co.
Pioneer Scientific Co., Division of Bausch & Lomb Inc.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sellstron Manufacturing Co.
Standard Glove Co.
United States Safety Service Co.
Welsh Mfg. Co.
Wilkie Optical, Inc.

See SAFETY PRODUCTS SOURCES for addresses

Willson Industrial Safety Equip.
Willson Products Div., Ray-O-Vac Co.

Covers, Machine, Plastic

Frommelt Industries Inc.
Herculite Protective Fabrics
Kennedy-Ingalls, Inc.
Pendergast, Albert W., Safety Equipment Co.

Covers, Self-Closing

Protectoseal Co., The
Witt Cornice Co., The

Covers, Valve & Flange

Akron Brass Mfg. Co., Inc.
Herculite Protective Fabrics
Standard Safety Equipment Co.

Crane Controls

Mefco Sales & Service, Inc.

Crane Cutoff Switch

Dillon, W.C. & Co.

Crane, Safety Warning Device

Electro-Alarm Safety Devices
New Jersey Safety Equipment Co.
Safety First Supply Company

Crutches

Lofstrand Co., The

Crutch Tips, Safety

Karel First Aid Supply Co.
Safety First Supply Company

Cups, Paper, Safety Slogan

Dixie Cup Div. American Can Co.
Karel First Aid Supply Co.

Curtains, Fireproofed

Adair, Robin W., Co., Inc.
Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Associated Bag & Apron Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Cotton Goods Mfg. Co.
Dunn Products
Flash Shield Products Co.
Frommelt Industries Inc.
General Scientific Equipment Co.
Herculite Protective Fabrics
Industrial Gloves Co.
Johns-Manville Corporation
Karel First Aid Supply Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Lynrus Finishing Co., Inc.
Midwest Glove Co., Inc.
Milburn Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Singer Glove Manufacturing Co.
Wamsutta-Pacific Industrial Div., M. Lowenstein & Sons, Inc.
Wheeler Protective Apparel, Inc.

Curtains, Welders'

Adair, Robin W., Co., Inc.
Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
Allied Glove Corp.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Associated Bag & Apron Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Cardo Chemical Corp.
Cotton Goods Mfg. Co.
Dunn Products
Flash Shield Products Co.
Frommelt Industries Inc.
General Scientific Equipment Co.
Herculite Protective Fabrics
Industrial Gloves Co.
Johns-Manville Corporation
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Sager Glove Corp., The
Singer Glove Manufacturing Co.
Standard Glove Co.
Standard Safety Equipment Co.
Wamsutta-Pacific Industrial Div., M. Lowenstein & Sons, Inc.
Wheeler Protective Apparel, Inc.

Safety First Supply Company

Cutters, Cable

Genter, C.D., Co.
Mine Safety Appliances Co.

Cutters, Wire Rope

Genter, C.D., Co.
Mine Safety Appliances Co.

Degreasers, Parts

Brulin & Co., Inc.
Chem Industrial Co., The
Graymills Corp.
Hillyard Chemical Co.
Huntington Laboratories, Inc.
Kelite Corp.
Magnus Chemical Co., Inc.
Oakite Products, Inc.
Packwood, G. H., Mfg. Co.
Pangborn Corp.
Penetone Co., The
Speco, Inc.
Tect, Inc.

Deodorizing Appliances

Hillyard Chemical Co.
Karel First Aid Supply Co.
Premco Mfg. Co.
Rochester Germicide Company

Detectors, Carbon Monoxide

Bacharach Industrial Instrument Co.
Boyer Campbell Div. White Sewing Machine Co.
General Scientific Equipment Co.
Genter, C.D., Co.
Karel First Aid Supply Co.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Union Industrial Equip. Corp.
United States Safety Service Co.

Detectors, Fire

American District Telegraph Co.
American LaFrance
Detectogas Instruments, Inc.
Falcon Alarm Co. Inc.
Fenwal Inc.
Fyr-Fyter Co., The
Gamewell Co., The
Kidde, Walter, & Co., Inc., Kidde Ultrasonic & Detection Alarms Div.
Notifier Corp.
Rochester Fire Equip. Co.
Safety First Supply Company
The Standard Electric Time Co.

Detectors, Gas

Boyer Campbell Div. White Sewing Machine Co.
Davis Emergency Equip. Co., Inc.
Detectogas Instruments, Inc.
Genter, C.D., Co.
Johnson-Williams, Inc.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Notifier Corp.
Safety First Supply Company
Union Industrial Equip. Corp.

Detectors, Ground

Brundee Co., The

Detectors, Radiation

Atomic Accessories, Inc.
Kahl Scientific Instrument Corp.
Landsverk Electrometer Company
Nuclear Measurements Corp.
Safety First Supply Company
Special Instruments Lab., Inc.
Union Industrial Equip. Corp.

Detectors, Smoke

American District Telegraph Co.
American LaFrance
Fyr-Fyter Co., The
Kidde, Walter, & Co., Inc.
Notifier Corp.
Rochester Fire Equip. Co., Inc.
Safety First Supply Company
Special Instruments Lab., Inc.

Detectors, Static

Detectogas Instruments, Inc.
Safety First Supply Company

Disinfectant and Deodorants

Brulin & Co., Inc.
Bullard, E. D., Co.
Dameron Enterprises, Inc.
Dolge, C. B., Co.
Du Pont De Nemours, E. I., & Co., Inc.
Fine Organics, Inc.
Franklin Research Co.
Hillyard Chemical Co.
Horizon Industries
Huntington Laboratories, Inc.
Johnson's Wax
Karel First Aid Supply Co.
Legge, Walter G., Co., Inc.
Multi-Clean Products, Inc.
Oakite Products, Inc.
Packwood, G. H., Mfg. Co.
Pendergast, Albert W., Safety Equipment Co.
Penetone Co., The
Rochester Germicide Company
Safety First Supply Company
West Chemical Products, Inc.
Wyandotte Chemicals Corp.

Dispensary Equipment

Drager Oxygen App. Corp.
Halperin, A. E., Co., Inc.
Karel First Aid Supply Co.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Dispensers, Foot Spray

Karel First Aid Supply Co.
Onox, Inc.
Sani-Mist, Inc.

Dispensers, Goggle and Spectacle Cleaners

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Carhoff Co.
Dow Corning Corp.
Eastern Safety Equip. Co., Inc.
General Scientific Equipment Co.
Karel First Aid Supply Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Silicone Paper Co. of America Inc., The
Standard Glove Co.
Standard Safety Equipment Co.
United States Safety Service Co.
Wilkie Optical, Inc.
Wilkins Co., Inc., The

Dispensers, Protective Ointments

Karel First Aid Supply Co.
Milburn Co.
Park Industries, Inc.

Dispensers, Salt Tablet

Boyer Campbell Div. White Sewing Machine Co.
Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
General Scientific Equipment Co.
Halperin, A. E., Co., Inc.
Karel First Aid Supply Co.
Medical Supply Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Standard Safety Equipment Co.
United States Safety Service Co.

Dispensers, Soap

Bobrick Dispensers, Inc.
Dameron Enterprises, Inc.
Dolge, C. B., Co.
Finnell System, Inc.
Gojer, Inc.
Hillyard Chemical Co.
Karel First Aid Supply Co.
Lightfoot Co., The, Inc.
Packwood, G. H., Mfg. Co.
Penetone Co., The
Rochester Germicide Company
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
West Chemical Products, Inc.

Duckboards

Irving Subway Grating Co., Inc.
Kelley Company
Magline, Inc.
Safety First Supply Company

Duck Shelter

Frommelt Industries Inc.

Doors, Fire and Service

Kinnear Mfg. Co., The
Rochester Safety Equip. Co., Inc.

Dosimeters

Atomic Accessories, Inc.
Fisher Scientific Co.
Kahl Scientific Instrument Corp.
Landsverk Electrometer Company
Nuclear Measurements Corp.
Radiation Counter Laboratories, Inc.
Special Instruments Lab., Inc.
Tracerlab Inc.
Union Industrial Equip. Corp.

See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Drill Table, Safety

Boyer Campbell Div. White Sewing Machine Co.
Modern Machine Tool Co.

Drinking Cups, Paper

Davis Emergency Equip. Co., Inc.
Dixie Cup Div. American Can Co.
Karel First Aid Supply Co.
Medical Supply Co.
Rochester Safety Equip. Co., Inc.
United States Envelope Co.

Drinking Fountains

Boyer Campbell Div. White Sewing Machine Co.
Haws Drinking Faucet Co.
Karel First Aid Supply Co.
Rochester Safety Equip. Co., Inc.
Taylor, Halsey W., Co.

Driver Training Materials

Porto-Clinic Instruments, Inc.

Drum Openers

Boyer Campbell Div. White Sewing Machine Co.
Merrill Brothers
Morse Manufacturing Co., Inc.
New Jersey Safety Equipment Co.
Safety First Supply Company

Dryers, Face and Hands, Electric

American Dryer Corporation
Chicago Hardware Foundry Co.
Huntington Laboratories, Inc.
World Dryer Corp.

Dryers, Fire Hose

Gentar, C.D., Co.
Halprin Supply Co.
Safety First Supply Company

Dust Arrestors

Buell Engineering Co., Inc.
DeVilbiss Co.
Draeger Oxygen App. Corp.
Franklin Research Co.
Handling Devices Co., Inc.
Hillyard Chemical Co.
Mine Safety Appliances Co.
Ruemelin Manufacturing Co.
Torit Manufacturing Co.
Wheelabrator Corp.

Dust Collectors

Buell Engineering Co., Inc.
Buffalo Forge Co.
DeVilbiss Co.
Draeger Oxygen App. Corp.
Fisher Scientific Co.
Handling Devices Co., Inc.
Karel First Aid Supply Co.
Mine Safety Appliances Co.
Pangborn Corp.
Rochester Safety Equip. Co., Inc.
Ruemelin Manufacturing Co.
Torit Manufacturing Co.
Wheelabrator Corp.

Dust Control Systems

Buell Engineering Co., Inc.
Buffalo Forge Co.
DeVilbiss Co.
Draeger Oxygen App. Corp.
Handling Devices Co., Inc.
Institute of Industrial Launderers
Karel First Aid Supply Co.
Pangborn Corp.
Torit Manufacturing Co.
Wheelabrator Corp.

Dust Counter

Draeger Oxygen App. Corp.
Gelman Instrument Company
Karel First Aid Supply Co.
Mine Safety Appliances Co.
Union Industrial Equip. Corp.

Dusters, Rock

Mine Safety Appliances Co.

Dust Suction Equipment

Handling Devices Co., Inc.
Mine Safety Appliances Co.
Torit Manufacturing Co.
Wheelabrator Corp.

Dynamometer

Dillon, W.C. & Co.
Mefco Sales & Service, Inc.

Ear Stopples

American Optical Co., Safety Products Div.
Bridgeport Industrial Products, Inc.
Flents Products Co., Inc.
General Scientific Equipment Co.
Karel First Aid Supply Co.
M-S-A, Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Protecto Ear Plugs, Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety Ear Protector Co.
Safety First Supply Company
Sigma Engineering Co.
Standard Glove Co.
Surgical Mechanical Research, Inc.

Electrode Holders

Aljay Mfg. Co., Inc.
Boyer Campbell Div. White Sewing Machine Co.
General Scientific Equipment Co.
Genter, C.D., Co.
Rochester Safety Equip. Co., Inc.

Elevating Table

Hamilton Tool Company, The

Elevator, Personnel Demountable

Ballymore Company
Hawkeye Products Corporation

Emblems, Safety

Emblem & Badge Mfg. Co.
Hornick, Frederick
Karel First Aid Supply Co.
Safety First Supply Company
The Metal Arts Co., Inc.
Williams Jewelry & Mfg. Co.

Exhaust Purifiers

Handling Devices Co., Inc.
National Mine Service Co.
Oxy-Catalyst, Inc.

Exit Devices

Vonnegut Hardware Co., Von Duprin Division

Explosion-Proof Switches

Joy Mfg. Co., Electrical Prod. Div.
Micro Switch, Division of Minneapolis-Honeywell Regulator Co.
Security Controls, Inc.

Explosives Carrier

Gentex Corp.
Mine Safety Appliances Co.

Eyeglass, Holder

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Dorsay Products Co.
Kimball Safety Prod. Co.
Pulmosan Safety Equip. Corp.
Seron Mfg. Co.

Eyeglass Pad

Dorsay Products

Eye Shades, Non-Flammable

Chicago Eye Shield Co.
Dockson Corp.
Kimball Safety Prod. Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Selistrom Manufacturing Co.

Eye Shields

American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Bausch & Lomb Inc.
Bridgeport Industrial Products, Inc.
Chicago Eye Shield Co.
Dockson Corp.
Fibre Metal Products Co., The
Glendale Optical Co., Inc.
Jackson Prod., Air Reduction Sales Co., Div. of Air Reduction Co., Inc.
Kedman Co.
Kennedy-Ingalls Inc.
Kerrco
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
National Mine Service Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Selistrom Manufacturing Co.
Standard Glove Co.
Standard Safety Equipment Co.
United States Safety Service Co.
Welsh Mfg. Co.
Willson Industrial Safety Equip.
Willson Products Div., Ray-O-Vac Co.

Eyesight Surveys

American Optical Co., Safety Products Co.
Mine Safety Appliances Co.
Safety First Supply Company
Selstrom Manufacturing Co.
Standard Glove Co.
United States Safety Service Co.
Willson Products Div., Ray-O-Vac Co.

Eye Washing Fountains

Advance Glove Mfg. Co.
Benson & Assoc.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
General Scientific Equipment Co.
Haws Drinking Faucet Co.
Karel First Aid Supply Co.
Logan Emergency Showers, Inc.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Speakman Co.
Standard Glove Co.
Standard Safety Equipment Co.

Face Shields

Air Reduction Sales Co.
American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Bullard, E.D., Co.
Chicago Eye Shield Co.
Dockson Corp.
Dunn Products
Eastern Safety Equip. Co., Inc.
Fendall Co.
Fibre Metal Products Co., The
General Scientific Equipment Co.
Glendale Optical Co., Inc.
Jackson Prod., Air Reduction Sales Co., Div. of Air Reduction Co., Inc.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Selistrom Manufacturing Co.
Standard Glove Co.
Standard Safety Equipment Co.
United States Safety Service Co.
Watchemoket Optical Co.
Welsh Mfg. Co.
Wheeler Protective Apparel, Inc.
Wilkie Optical, Inc.
Willson Industrial Safety Equip.
Willson Products Div., Ray-O-Vac Co.

Fans

Buffalo Forge Co.
Burt Manufacturing Co., The
Carey, Philip, Mfg. Co.
Coppus Engineering Corp.
DeBothezat Fans Div., American Machine and Metals, Inc.
Ruemelin Manufacturing Co.
Super Vacuum Mfg. Co.

Faucets, Self-Closing

New Jersey Safety Equipment Co.
Protectoseal Co., The
Rochester Safety Equip. Co., Inc.

Feeders, Punch Press

Atlantic India Rubber Works, Inc.
Boyer Campbell Div. White Sewing Machine Co.
Littell, F.J., Machine Co., Vac-u-mation Division
New Jersey Safety Equipment Co.
Osborn Mfg. Corp.
Pendergast, Albert W., Safety Equipment Co.
Rochester Safety Equip. Co., Inc.

Film or Slides, Safety

Bray Studios, Inc.
Bullard, E.D., Co.
Disney Productions, Walt
Falcon Alarm Co. Inc.
International Film Bureau, Inc.
Porto-Clinic Instruments, Inc.
Protectoseal Co., The
Pyramid Film Producers
United World Films, Inc.
Vonnegut Hardware Co., Von Duprin Division
Whitney, L.A., Assoc., Inc.

Filters, Air Device

Acme Protection Equip. Co.
Advance Glove Mfg. Co.
Bullard, E.D., Co.
DeVilbiss Co.
Draeger Oxygen App. Corp.
Gelman Instrument Company
Handling Devices Co., Inc.
Hillyard Chemical Co.
Mine Safety Appliances Co.
Scott Aviation Corp.
Wheelabrator Corp.

Filters, Special

Kewaunee Mfg. Co.
Mine Safety Appliances Co.
Morland Associates
Safety First Supply Company
Wheelabrator Corp.

Fire Extinguishers

Alim Corp.
Allen, W.D., Manufacturing Co.

See SAFETY PRODUCTS SOURCES for addresses

American LaFrance
Ansul Chemical Co.
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Bridgeport Industrial Products, Inc.
Cardox-Div. of Chemetron Corp.
Diener Industries Inc.
Fisher Scientific Co.
Fyr-Fyter Co., The
General Fire Extinguisher Corp.
Genter, C.D., Co.
Halprin Supply Co.
Kidde, Walter, & Co., Inc.
Lofstrand Co., The
National Mine Service Co.
Protectoseal Co., The
Randolph Laboratories, Inc.
Rockwood Sprinkler Co.
Safety First Products Corp.
Safety First Supply Company
Seco Safety Products Co.

Fire Extinguisher Foam

Akron Brass Mfg. Co. Inc.
Allen, W.D., Manufacturing Co.
American LaFrance
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Fyr-Fyter Co., The
General Fire Extinguisher Corp.
Genter, C.D., Co.
Halprin Supply Co.
National Foam System, Inc.
Randolph Laboratories, Inc.
Rochester Fire Equip. Co.
Rockwood Sprinkler Co.
Safety First Supply Company

Fire Extinguisher Inspection Tags

Allen, W.D., Manufacturing Co.
American LaFrance
Diener Industries Inc.
Fyr-Fyter Co., The
General Fire Extinguisher Corp.
Halprin Supply Co.
Minute Co., The
Rochester Fire Equip. Co.
Safety First Supply Company

Fire Extinguisher Recharges and Equipment

Allen Corp.
Allen, W.D., Manufacturing Co.
American LaFrance
Ansul Chemical Co.
Diener Industries Inc.
Fyr-Fyter Co., The
General Fire Extinguisher Corp.
Genter, C.D., Co.
Halprin Supply Co.
Kidde, Walter, & Co., Inc.
National Foam System, Inc.
National Mine Service Co.
Randolph Laboratories, Inc.
Rochester Fire Equip. Co.
Safety First Supply Company

Fire Extinguisher Seals

American LaFrance
Fyr-Fyter Co., The
General Fire Extinguisher Corp.
Genter, C.D., Co.
Halprin Supply Co.
Rochester Fire Equip. Co.
Safety First Supply Company

Fire Extinguisher Systems

American LaFrance
Ansul Chemical Co.
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Cardox-Div. of Chemetron Corp.
Firetox System, Inc.
Fyr-Fyter Co., The
General Fire Extinguisher Corp.
Genter, C.D., Co.
Grinnell Co., Inc.
Halprin Supply Co.
Kidde, Walter, & Co., Inc.
National Foam System, Inc.
Randolph Laboratories, Inc.
Rochester Fire Equip. Co.
Rockwood Sprinkler Co.
Safety First Supply Company

Fire Foam Generators

Akron Brass Mfg. Co., Inc.
American LaFrance
Cardox-Div. of Chemetron Corp.
Fyr-Fyter Co., The
Genter, C.D., Co.
Halprin Supply Co.
National Foam System, Inc.
Rochester Fire Equip. Co.
Safety First Supply Company

Fire Hose

Allen, W.D., Manufacturing Co.
American Biltrite Rubber Co., Boston Woven Hose & Rubber Division
American LaFrance
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Fyr-Fyter Co., The
General Fire Extinguisher Corp.
Genter, C.D., Co.
Goodall Rubber Co.
Goodyear Tire & Rubber Co., The
Halprin Supply Co.
Rochester Fire Equip. Co.
Seco Safety Products Co.
Safety First Supply Company

Fire Hose Accessories

Akron Brass Mfg. Co., Inc.
Allen, W.D., Manufacturing Co.
American Biltrite Rubber Co., Boston Woven Hose & Rubber Division
American LaFrance
Fyr-Fyter Co., The
Halprin Supply Co.
National Foam System, Inc.
Rochester Fire Equip. Co.
Safety First Supply Company
Seco Safety Products Co.

Fire Hose Reels

Allen, W.D., Manufacturing Co.
American LaFrance
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Fyr-Fyter Co., The
General Fire Extinguisher Corp.
Genter, C.D., Co.
Halprin Supply Co.
National Foam System, Inc.
Rochester Fire Equip. Co.
Safety First Supply Company
Seco Safety Products Co.

Fire Ladders, Aluminum

Aluminum Ladder Co.
American LaFrance
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Duo-Safety Ladder Corp.
Fyr-Fyter Co., The
Genter, C.D., Co.
Halprin Supply Co.
Harryatt-Lane and Co., Inc.
Rochester Fire Equip. Co.
Safety First Supply Company

Fire Ladders, Wood

American LaFrance
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Duo-Safety Ladder Corp.
Fyr-Fyter Co., The
Genter, C.D., Co.
Halprin Supply Co.
Rochester Fire Equip. Co.
Safety First Supply Company

Fire Nozzles

Akron Brass Mfg. Co., Inc.
Allen, W.D., Manufacturing Co.
American LaFrance
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Buckeye Fire Dept. Equip.
Fyr-Fyter Co., The
Genter, C.D., Co.
Halprin Supply Co.
National Foam System, Inc.
Rochester Fire Equip. Co.
Safety First Supply Company
Seco Safety Products Co.

Fire Platforms

Truck Equip. Co.

Fire Pumps

American LaFrance
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Genter, C.D., Co.
Halprin Supply Co.
National Foam System, Inc.
Rochester Fire Equip. Co.
Safety First Supply Company

Fire Sirens

American LaFrance
Federal Sign and Signal Corp.
Fyr-Fyter Co., The
Genter, C.D., Co.
Halprin Supply Co.
Rochester Fire Equip. Co.
Safety First Supply Company
Sperti Faraday, Inc.

Fire Trucks, Industrial

American LaFrance
Ansul Chemical Co.
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Cardox-Div. of Chemetron Corp.
Electri-Car Division, Victor Adding Machine Co.
Genter, C.D., Co.
Halprin Supply Co.
National Foam System, Inc.
Seco Safety Products Co.
Victor Adding Machine Co., Electra-Car Div.

First Aid Cabinets

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Davis Emergency Equip. Co., Inc.
Draeger Oxygen App. Corp.
General Scientific Equipment Co.
Halperin, A. E., Co., Inc.
Halprin Supply Co.
Karel First Aid Supply Co.
Medical Supply Co.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company

First Aid Kits

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
General Scientific Equipment Co.
Halperin, A. E., Co., Inc.
Halprin Supply Co.
Karel First Aid Supply Co.
Medical Supply Co.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
The Pac-Kit Safety Equipment Co., Inc.

First Aid Materials

American Optical Co., Safety Products Div.
Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
Draeger Oxygen App. Corp.
General Scientific Equipment Co.
Halperin, A. E., Co., Inc.
Halprin Supply Co.
Hynson, Westcott & Dunning, Inc.
Karel First Aid Supply Co.
Kip, Inc.
Medical Supply Co.
Mine Safety Appliances Co.
National Mine Service Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
The Pac-Kit Safety Equipment Co., Inc.

First Aid Room Equipment

Draeger Oxygen App. Corp.
Halperin, A. E., Co., Inc.
Karel First Aid Supply Co.
Luxo Lamp Corp.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Stephenson Corp.

First Aid Trainer

Alderson Research Laboratories, Inc.
Karel First Aid Supply Co.
Safety First Supply Company

Floats, Dangar

Associated Bag & Apron Co.
Charleston Rubber Co.
Davis Emergency Equip. Co., Inc.
Fabrico, Inc.
Herculite Protective Fabrics
Industrial Gloves Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Prairie State Products Co.
Ready Made Sign Co., Inc.
Safety First Supply Company
Sawyer-Tower, Inc.
Standard Glove Co.
Stonehouse Signs, Inc.

Floats, Safety

Associated Bag & Apron Co.
Charleston Rubber Co.
Charleston Rubber Co.
Herculite Protective Fabrics
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Prairie State Products Co.
Ready Made Sign Co., Inc.
Safety First Supply Company
Sawyer-Tower, Inc.
Stonehouse Signs, Inc.
Todcar Products Co.
Vari-Products Co.
West Side Iron Works, Inc.

Flame Retardant Clothing

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
Boyer Campbell Div. White Sewing Machine Co.
Flash Shield Products Co.
Frommelt Industries Inc.
Herculite Protective Fabrics
Industrial Gloves Co.
Institute of Industrial Launderers
Johns-Manville Corporation
Karel First Aid Supply Co.
Kimball Safety Prod. Co.
Lynrus Finishing Co., Inc.
Midwest Glove Co., Inc.
Minnesota Mining & Mfg. Co.
Pendergast, Albert W., Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Singer Glove Manufacturing Co.
Travis Fabrics, Inc.
Union Industrial Equip. Corp.

Continued on next page

See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Wansutta-Pacific Industrial Div., M. Lowenstein & Sons, Inc.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.

Flame Retardant, Fabric

Associated Bag & Apron Co.
Du Pont De Nemours, E. I., & Co., Inc.
Flamort Chemical Co., Inc.
Frommelt Industries Inc.
Industrial Gloves Co.
Johns-Manville Corporation
Kimball Safety Prod. Co.
Racine Glove Co., Inc.
Rochester Fire Equip. Co.
Safety Clothing and Equipment Co.
Standard Glove Co.
Travis Fabrics, Inc.
Union Industrial Equip. Corp.
Wheeler Protective Apparel, Inc.

Flame Retardant, Fibre Board

Alm Corp.
Carey, Philip, Mfg. Co.
Du Pont De Nemours, E. I., & Co., Inc.
Flamort Chemical Co., Inc.
Johns-Manville Corporation

Flame Retardant, Wood

Du Pont De Nemours, E. I., & Co., Inc.
Flamort Chemical Co., Inc.

Flashlights

Bright Star Industries
Browne, Stewart R., Mfg. Co., Inc.
Genter, C. D., Co.
Justrite Mfg. Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Willson Products Div., Ray-O-Vac Co.

Flashlights, Permissible

Bright Star Industries
Browne, Stewart R., Mfg. Co., Inc.
Carpenter Mfg. Co.
Genter, C. D., Co.
Justrite Mfg. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Willson Products Div., Ray-O-Vac Co.

Floodlights, Emergency

Carpenter Mfg. Co.
Crouse-Hinds Co.
Halprin Supply Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Rochester Fire Equip. Co.
Safety First Supply Company
Standard Glove Co.
Tedcar Products Co.
U-C-Lite Manufacturing Co.
Willson Products Div., Ray-O-Vac Co.

Floor Coating, Conductive, Non-Slip

Brulin & Co., Inc.
Dolge, C. B., Co.
Federal Flooring Corp.
Finnell System, Inc.
Franklin Research Co.
Hillyard Chemical Co.
Huntington Laboratories, Inc.
Johnson's Wax
Lancaster Chemical Corp.
Legge, Walter G., Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Norton Co.
Penetone Co., The
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Truscon Laboratories
West Chemical Products, Inc.

Floor Finishing Compounds

American Floor Machine Co., Div. of American-Lincoln Corp.
Azrock Floor Products
B. F. Goodrich Flooring Products
Brulin & Co., Inc.
Dolge, C. B., Co.
Du Pont De Nemours, E. I., & Co., Inc.
Finnell System, Inc.
Franklin Research Co.
Fulton Asphalt Co.
Hild Floor Machine Co., Inc.
Hillyard Chemical Co.
Huntington Laboratories, Inc.
Johnson's Wax
Legge, Walter G., Co., Inc.
Magnus Chemical Co., Inc.
Masury-Young Co.
National Chemsearch Corp.
Penetone Co., The
Rochester Safety Equip. Co., Inc.
Truscon Laboratories
West Chemical Products, Inc.
Wyandotte Chemicals Corp.

Flooring Materials, Safety

Alan Wood Steel Co.
American Abrasive Metals Co.
American Mason Safety Tread Co.
B. F. Goodrich Flooring Products
Dravo Corp.
Federal Flooring Corp.
Fulton Asphalt Co.
Globe Co., The
Herculite Protective Fabrics
Hillyard Chemicals
Himco
Irving Subway Grating Co., Inc.
Johns-Manville Corporation
Lancaster Chemical Corp.
Legge, Walter G., Co., Inc.
Marryatt-Lane and Co., Inc.
Masury-Young Co.
Mefflex Products Co., Inc.
Mine Safety Appliances Co.
Minnesota Mining and Mfg. Co.
Moore, Samuel, & Co.
Norton Co.
Penetone Co., The
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Snyder, W. L., & Son, Inc.
Truscon Laboratories
United States Rubber Co.

Floor Plate

Alan Wood Steel Co.
Aluminum Company of America
American Abrasive Metals Co.
Globe Co., The
Inland Steel Company
Marryatt-Lane and Co., Inc.
United States Steel Corp.

Fluorescent Lamp Locks

General Scientific Equipment Co.
Gets-A-Lite Co.
Safety First Supply Company

Fluorescent Tube Changers

Gets-A-Lite Co.

Fluorescent Tube Disposal

New Jersey Safety Equipment Co.

Fog-Guns

Akron Brass Mfg. Co., Inc.
American LaFrance
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Buckeye Fire Dept. Equip.
Genter, C. D., Co.
Halprin Supply Co.
Rochester Fire Equip. Co.

Fog-Nozzle

Akron Brass Mfg. Co., Inc.
Allen, W. D., Manufacturing Co.
American LaFrance
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Buckeye Fire Dept. Equip.
Fyr-Fyter Co., The
Genter, C. D., Co.
Halprin Supply Co.
Rochester Fire Equip. Co.
Rockwood Sprinkler Co.
Safety First Supply Company
Seco Safety Products Co.

Foot Mats, Disinfecting

Hillyard Chemical Co.

Foot Mats, Skin Toughening

Onox, Inc.

Fume Collectors

Buell Engineering Co., Inc.
Mine Safety Appliances Co.
Pangborn Corp.
Ruemelin Manufacturing Co.
Torit Manufacturing Co.
Wheelabrator Corp.

Fumigants

Dow Chemical Co.
Huntington Laboratories, Inc.
West Chemical Products, Inc.

Fungicides

Dolge, C. B., Co.
Dow Chemical Co.
Du Pont De Nemours, E. I., & Co., Inc.
Huntington Laboratories, Inc.
Johnson's Wax
Karel First Aid Supply Co.
Legge, Walter G., Co., Inc.
Onox, Inc.
Packwood, G. H., Mfg. Co.
Penetone Co., The
Rochester Germicide Company
United States Rubber Co.
West Chemical Products, Inc.

Gage Glasses

Dockson Corp.
Genter, C. D., Co.
New Jersey Safety Equipment Co.

Gastester

Davis Emergency Equip. Co., Inc
Detectogas Instruments, Inc.
Draeger Oxygen App. Corp.
Gelman Instrument Co.
Johnson-Williams, Inc.
Karel First Aid Supply Co.
Mine Safety Appliances Co.

Geiger-Mueller, Beta

Atomic Accessories, Inc.
Gelman Instrument Co.
Kahl Scientific Instrument Corp.
Nuclear Measurements Corp.
Radiation Counter Laboratories, Inc.
Technical Associates
Tracerlab Inc.
Union Industrial Equip. Corp.
United States Radium Corp.
Universal Transistor Products Corp.

Geiger-Mueller, Gamma

Atomic Accessories, Inc.
Gelman Instrument Co.
Kahl Scientific Instrument Corp.
Nuclear Measurements Corp.
Radiation Counter Laboratories, Inc.
Technical Associates
Tracerlab Inc.
Union Industrial Equip. Corp.
United States Radium Corp.
Universal Transistor Products Corp.

Geiger-Mueller, Portable

Atomic Accessories, Inc.
Gelman Instrument Co.
Kahl Scientific Instrument Corp.
Nuclear Measurements Corp.
Radiation Counter Laboratories, Inc.
Special Instruments Lab., Inc.
Technical Associates
Tracerlab Inc.
Union Industrial Equip. Corp.
Universal Transistor Products Corp.

Geiger-Mueller, Vehicle Use

Kahl Scientific Instrument Corp.
Technical Associates
Tracerlab Inc.
Union Industrial Equip. Corp.

Germicides

Brulin & Co., Inc.
Damaron Enterprises, Inc.
Dow Chemical Co.
Du Pont De Nemours, E. I., & Co., Inc.
Fine Organics, Inc.
Franklin Research Co.
Halperin, A. E., Co., Inc.
Hillyard Chemical Co.
Horizon Industries
Huntington Laboratories, Inc.
Karel First Aid Supply Co.
Legge, Walter G., Co., Inc.
National Chemsearch Corp.
Oakite Products, Inc.
Packwood, G. H., Mfg. Co.
Pendergast, Albert W., Safety Equipment Co.
Penetone Co., The
Rochester Germicide Company
West Chemical Products, Inc.
Willson Products Div., Ray-O-Vac Co.
Wyandotte Chemicals Corp.

Glass, Safety

American Industrial Safety Equip. Co.
Bausch & Lomb Inc.
Boyer Campbell Div. White Sewing Machine Co.
Chicago Eye Shield Co.
Dockson Corp.
Eastern Safety Equip. Co., Inc.
Fendall Co.
Fibre Metal Products Co., The
Glendale Optical Co., Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Sellstrom Manufacturing Co.
Standard Glove Co.
Watchemoket Optical Co.
Welsh Mfg. Co.
Willson Products Div., Ray-O-Vac Co.
Wilkie Optical, Inc.

Glasswasher & Sanitizer

Lofstrand Co., The

Glass, Welding Plates and Lenses

Air Reduction Sales Co.
American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Bausch & Lomb Inc.
Boyer Campbell Div. White Sewing Machine Co.

See SAFETY PRODUCTS SOURCES for addresses

Chicago Eye Shield Co.
Dockson Corp.
Eastern Safety Equip. Co., Inc.
Fendall Co.
Fibre Metal Products Co., The
General Scientific Equipment Co.
Glendale Optical Co., Inc.
Jackson Prod., Air Reduction Sales Co., Div. of Air Reduction Co., Inc.
Kedman Co.
Kimball Safety Prod. Co.
Linde Co., Div. of Union Carbide Corp.
Mine Safety Appliances Co.
Pendergast, Albert W., Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Sellstrom Manufacturing Co.
Standard Glove Co.
United States Safety Service Co.
Welsh Mfg. Co.
Wilkie Optical, Inc.
Willson Products Division
Willson Products Div., Ray-O-Vac Co.

Glove Boxes

Kewaunee Mfg. Co.
Midwest Glove Co., Inc.
Radiation Counter Laboratories, Inc.

Gloves, Heat Resistant

Advance Glove Mfg. Co.
Air Reduction Sales Co.
Aljay Mfg. Co., Inc.
Allied Glove Corp.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
David's Gloves, Inc.
Dunn Products
Eastern Safety Equip. Co., Inc.
Edmont Inc.
General Scientific Equipment Co.
Industrial Gloves Co.
Jomac Inc.
Johns-Manville Corporation
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Liberty Protective Leathers, Inc.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Pendergast, Albert W., Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Record Industrial Co.
Riegel Textile Corp., Glove Div.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Seiberling Latex Products Co.
Singer Glove Manufacturing Co.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.

Gloves, Linemen's Protective

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
Allied Glove Corp.
American Optical Co., Safety Products Div.
Bashlin, W. M., Co.
Boyer Campbell Div. White Sewing Machine Co.
Charleston Rubber Co.
David's Gloves, Inc.
Davis Emergency Equip. Co., Inc.
Dunn Products
Eastern Safety Equip. Co., Inc.
Goodall Rubber Co.
Goodrich, B. F. Footwear Products
Hood Rubber Products
Industrial Gloves Co.
Kennedy-Ingalls Inc.
Midwest Glove Co., Inc.
Miller Equip. Co., Inc.
Mine Safety Appliances Co.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Salisbury, W. H., & Co.
Singer Glove Manufacturing Co.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Surety Rubber Co.
Wash-Rite Co., Inc.
Wilson Rubber Co., The, Div. of Becton, Dickinson & Co.
Wolverine Shoe & Tanning Corp.

Gloves, Metal Mesh

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
Allied Glove Corp.
David's Gloves, Inc.
Eastern Safety Equip. Co., Inc.
Industrial Gloves Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Wash-Rite Co., Inc.

Gloves and Mittens

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
Allied Glove Corp.
American Optical Co., Safety Products Div.
Bashlin, W. M., Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Charleston Rubber Co.
Charleston Rubber Co.
David's Gloves, Inc.
Dunn Products
Eastern Safety Equip. Co., Inc.
Edmont Inc.
Fisher Scientific Co.
Gebhardt, A. L., Co.
Goodall Rubber Co.
Goodrich, B. F. Footwear Products
Granet Corp.
Hood Rubber Products
Industrial Gloves Co.
Jomac Inc.
Johns-Manville Corporation
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Liberty Protective Leathers, Inc.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Monte Glove Co.
Pendergast, Albert W., Safety Equipment Co.
Pioneer Rubber Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Record Industrial Co.
Riegel Textile Corp., Glove Div.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Salisbury, W. H., & Co.
Singer Glove Manufacturing Co.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Standard Safety Equipment Co.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.
Wilson Rubber Co., The, Div. of Becton, Dickinson & Co.
Wolverine Shoe & Tanning Corp.
Woolrich Woolen Mills

Gloves, Reclaiming

Allied Glove Corp.
Institute of Industrial Launderers
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Wash-Rite Co., Inc.

Gloves, Rubber or Synthetic

Advance Glove Mfg. Co.
Allied Glove Corp.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Charleston Rubber Co.
Charleston Rubber Co.
David's Gloves, Inc.
Dunn Products
Eastern Safety Equip. Co., Inc.
Edmont Inc.
General Scientific Equipment Co.
Goodall Rubber Co.
Goodrich, B. F. Footwear Products
Granet Corp.
Hood Rubber Products
International Latex Corp.
Jomac Inc.
Karel First Aid Supply Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Pangborn Corp.
Pioneer Rubber Co.
Record Industrial Co.
Riegel Textile Corp., Glove Div.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Salisbury, W. H., & Co.
Seco Safety Products Co.
Seiberling Latex Products Co.
Singer Glove Manufacturing Co.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Standard Safety Equipment Co.
Surety Rubber Co.
Wash-Rite Co., Inc.
Wilson Rubber Co., The, Div. of Becton, Dickinson & Co.

Gauges

Air Reduction Sales Co.
American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Bausch & Lomb Inc.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Chicago Eye Shield Co.
Dockson Corp.
Dunn Products
Eastern Safety Equip. Co., Inc.
Fendall Co.
Fibre Metal Products Co., The
General Scientific Equipment Co.
Glendale Optical Co., Inc.
Jackson Prod., Air Reduction Sales Co., Div. of Air Reduction Co., Inc.
Jones and Company
Kedman Co.
Kerrco
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Sellstrom Manufacturing Co.
Standard Glove Co.
Standard Safety Equipment Co.
Titmus Optical Co., Inc.
United States Safety Service Co.
Watchemoket Optical Co.
Wilkie Optical, Inc.
Welsh Mfg. Co.
Willson Industrial Safety Equip.
Willson Products Div., Ray-O-Vac Co.

Goggles and Spectacles Cleaners

Acme Protection Equip. Co
American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Carhoff Co.
Dow Corning Corp.
Eastern Safety Equip. Co., Inc.
General Scientific Equipment Co.
Glendale Optical Co., Inc.
International Latex Corp.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.
Standard Safety Equipment Co.
United States Safety Service Co.
Wilkie Optical, Inc.
Willson Industrial Safety Equip.
Willson Products Division
Willson Products Div., Ray-O-Vac Co.

Gongs, Sirens, Horns, Signaling Devices

Autocall Co., The
Falcon Alarm Co. Inc.
Federal Sign and Signal Corp.
Ferrell Mfg. Co.
Fyr-Fyter Co., The
Gamewell Co., The
Genter, C. D., Co.
Halprin Supply Co.
New Jersey Safety Equipment Co.
Notifier Corp.
Rochester Fire Equip. Co.
Safety First Supply Company

Grating, Safety

Aluminum Company of America
Boyer Campbell Div. White Sewing Machine Co.
Dravo Corp.
Globe Co., The
Irving Subway Grating Co., Inc.
Marryatt-Lane and Co., Inc.
United States Steel Corp.
Wheeling Corrugating Co.

Grinders, Tool

Boyer Campbell Div. White Sewing Machine Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Skill Corp.
Thor Power Tool Co.

Guard Materials

Acro Metal Stamping Co.

Guard Rails, Safety

Aluminum Company of America
Hollaender Mfg. Co., The
Irving Subway Grating Co., Inc.
Jay, D., Products Co., Inc.
Marryatt-Lane and Co., Inc.
Morland Associates
United States Steel Corp.

Guards, Fan

Acro Metal Stamping Co.
American Allsafe Co., Inc.
Bridgeport Industrial Products, Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company

Guards, Finger

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
Allied Glove Corp.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
David's Gloves, Inc.
Dunn Products
General Bandages, Inc.
General Scientific Equipment Co.
Industrial Gloves Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.

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See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Mine Safety Appliances Co.
Modern First Aid Necessities Co.
New Jersey Safety Equipment Co.
Plasco Safety Products Co.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Singer Glove Manufacturing Co.
Standard Glove Co.
Standard Safety Equipment Co.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.

Guards, Foot and Toe

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
Boyer Campbell Div. White Sewing Machine Co.
Dunn Products
Elwood Safety Appliance Co.
General Scientific Equipment Co.
Industrial Gloves Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Record Industrial Co.
Reece Wooden Sole Shoe Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.
Standard Safety Equipment Co.
Wheeler Protective Apparel, Inc.

Guards for Edged Tools

Bashlin, W. H., Co.
Safety First Supply Company
Tool & Manufacturing Co., Inc., The

Guards, Gear

Acro Metal Stamping Co.
Bridgeport Industrial Products, Inc.
Searjeant Metal Products, Inc.

Guards, Grinders, Portable

Acro Metal Stamping Co.
Boyer Campbell Div. White Sewing Machine Co.
Carroll Pressed Metal, Inc.
Genter, C. D., Co.
Morrison Products
Safety First Supply Company
Thor Power Tool Co.

Guards, Grinding Wheel

Acro Metal Stamping Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Carroll Pressed Metal, Inc.
Junkin Safety Appliance Co., Inc.
New Jersey Safety Equipment Co.
Genter, C. D., Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Thor Power Tool Co.

Guards, Guide Pin

Acro Metal Stamping Co.
Boyer Campbell Div. White Sewing Machine Co.
Central Safety Equip. Co.
Elasticone Division, Central Safety Equip. Co.
Genter, C. D., Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Wiesman Mfg. Co.

Guards, Jointer

Acro Metal Stamping Co.
Boyer Campbell Div. White Sewing Machine Co.
Brett-Guard Corp.
Bridgeport Industrial Products, Inc.
Genter, C. D., Co.
New Jersey Safety Equipment Co.
Peterson, R. E., Company
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company

Guards, Kick Press

Acro Metal Stamping Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Genter, C. D., Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Searjeant Metal Products, Inc.

Guards, Lamps

Acro Metal Stamping Co.
Ericson Manufacturing Co., The
Genter, C. D., Co.
Gets-A-Lite Co.
McGill Mfg. Co., Inc.
Rochester Safety Equip. Co., Inc.

Guards, Lathe

Acro Metal Stamping Co.
Bridgeport Industrial Products, Inc.
Genter, C. D., Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company

Guards, Machine

Acro Metal Stamping Co.
American Allsafe Co., Inc.
Bridgeport Industrial Products, Inc.
Genter, C. D., Co.
Globe Co., The
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Searjeant Metal Products, Inc.
Security Controls, Inc.

Guards, Planer

Acro Metal Stamping Co.
Bridgeport Industrial Products, Inc.
Genter, C. D., Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.

Guards, Platen Press

Acro Metal Stamping Co.
Genter, C. D., Co.
Security Controls, Inc.

Guards, Portable Lamp

Acro Metal Stamping Co.
Ericson Manufacturing Co., The
Genter, C. D., Co.
McGill Mfg. Co., Inc.
Rochester Safety Equip. Co., Inc.

Guards, Power Press

Acro Metal Stamping Co.
American Allsafe Co., Inc.
Boyer Campbell Div. White Sewing Machine Co.
Brett-Guard Corp.
Bridgeport Industrial Products, Inc.
General Automation Corp.
Genter, C. D., Co.
Junkin Safety Appliance Co., Inc.
Magline, Inc.
New Jersey Safety Equipment Co.
Osborn Mfg. Corp.
Positive Safety Mfg. Co.
Rochester Safety Equip. Co., Inc.
Safeguard Mfg. Co.
Safety Clothing and Equipment Co.
Safety First Supply Company
Schrader's, A., Son., Inc.
Searjeant Metal Products, Inc.
Security Controls, Inc.
Standard Safety Equipment Co.
Wiesman Mfg. Co.

Guards, Power Shear

Acro Metal Stamping Co.
Bridgeport Industrial Products, Inc.
Genter, C. D., Co.
New Jersey Safety Equipment Co.
Searjeant Metal Products, Inc.
Security Controls, Inc.

Guards, Saw

Acro Metal Stamping Co.
Boyer Campbell Div. White Sewing Machine Co.
Brett-Guard Corp.
Bridgeport Industrial Products, Inc.
Buhrke, R. H., Co.
Central City Machine & Tool Co.
General Scientific Equipment Co.
Genter, C. D., Co.
New Jersey Safety Equipment Co.
Peterson, R. E., Company
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company

Guards, Shaper

Acro Metal Stamping Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Genter, C. D., Co.
Peterson, R. E., Company
Safety Clothing and Equipment Co.
Safety First Supply Company

Guards, Shin

Advance Glove Mfg. Co.
Dunn Products
Elwood Safety Appliance Co.
General Scientific Equipment Co.
Industrial Gloves Co.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Standard Glove Co.
Wheeler Protective Apparel, Inc.

Guards, Steel Strapping

Acro Metal Stamping Co.
Genter, C. D., Co.

Guards, Wire

Acro Metal Stamping Co.
Ericson Manufacturing Co., The
Genter, C. D., Co.

Hair Guards

Advance Glove Mfg. Co.
Associated Bag & Apron Co.
General Scientific Equipment Co.
Kennedy-Ingalls Inc.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Standard Safety Equipment Co.

Hand, Alpha (Radiation Detection)

Kahl Scientific Instrument Corp.
Technical Associates
Traceriab Inc.

Hand Cream, Protective

American Optical Co., Safety Products Div.
Ayerst Laboratories
Boyer Campbell Div. White Sewing Machine Co.
Brossard, Lester L., Co.
Bullard, E. D., Co.
Chase Chemical Co.
Davis Emergency Equip. Co., Inc.
Dolge, C. B., Co.
Du Pont De Nemours, E. I., & Co., Inc.
Fisher Scientific Co.
Gojer, Inc.
Halperin, A. E., Co., Inc.
Hygiene Research Inc.
Karel First Aid Supply Co.
Magnus Chemical Co., Inc.
Milburn Co.
Mine Safety Appliances Co.
National Chemsearch Corp.
Packwood, G. H., Mfg. Co.
Rochester Safety Equip. Co., Inc.
Standard Glove Co.
West Chemical Products, Inc.

Hand & Foot Beta, Gamma (Radiation Detection)

Kahl Scientific Instrument Corp.
Technical Associates

Hand Guards

Acro Metal Stamping Co.
Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Dunn Products
General Scientific Equipment Co.
Industrial Gloves Co.
Jomac Inc.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Plasco Safety Products Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Security Controls, Inc.
Singer Glove Manufacturing Co.
Standard Glove Co.
Tool & Manufacturing Co., Inc., The
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.

Handlines

Buhrke, R. H., Co.
Jay, D., Products Co., Inc.
Klein, Mathias, & Sons, Inc.
Miller Equip. Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Hand Pumps

American LaFrance
Fisher Scientific Co.
Halprin Supply Co.
New Jersey Safety Equipment Co.
Protectoseal Co., The
Safety First Supply Company
Tokheim Corp.

Harness, Industrial Safety

Atlas Safety Equip. Co., Inc.
Bashlin, W. H., Co.
Boyer Campbell Div. White Sewing Machine Co.
Buhrke, R. H., Co.
Davis Emergency Equip. Co., Inc.
Klein, Mathias, & Sons, Inc.
Miller Equip. Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Rose Mfg. Co.
Safety First Supply Company

See *SAFETY PRODUCTS SOURCES* for addresses

Safety Products Index

Hot Liners

Air Reduction Sales Co.
Aljay Mfg. Co.
American Industrial Safety Equip. Co.
Bashlin, W. H., Co.
Boyer Campbell Div. White Sewing Machine Co.
Bullard, E. D., Co.
Dockson Corp.
Dunn Products
Eastern Safety Equip. Co., Inc.
Fibre Metal Products Co., The
Gentex Corp.
Industrial Gloves Co.
Jackson Prod., Air Reduction Sales Co., Div. of Air Reduction Co., Inc.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
National Mine Service Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Sawyer-Tower, Inc.
Standard Glove Co.
Standard Safety Equipment Co.
Welsh Mfg. Co.
Wilkie Optical, Inc.
Willson Products Div., Ray-O-Vac Co.

Hats and Caps, Safety

Air Reduction Sales Co.
American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Bashlin, W. H., Co.
Bausch & Lomb Inc.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
Dockson Corp.
Eastern Safety Equip. Co., Inc.
Fibre Metal Products Co., The
Fyrepel Products, Inc.
Fyr-Fyter Co., The
General Scientific Equipment Co.
Gentex Corp.
Goodall Rubber Co.
Jackson Prod., Air Reduction Sales Co., Div. of Air Reduction Co., Inc.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Sawyer-Tower, Inc.
Standard Glove Co.
Safety Clothing and Equipment Co.
Standard Safety Equipment Co.
Welsh Mfg. Co.
Wilkie Optical, Inc.
Willson Industrial Safety Equip.
Willson Products Div., Ray-O-Vac Co.

Hearing Aids

Beltone Hearing Aid Co.
Maico Electronics, Inc.
Tonemaster Mfg. Co.
Zenith Radio Corporation, Hearing Aid Div.

Hearing Protectors

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Clark, David, Co., Inc.
M-M-A, Inc.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Protecto Ear Plugs, Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sigma Engineering Co.
Surgical Mechanical Research, Inc.
Willson Industrial Safety Equip.
Willson Products Div., Ray-O-Vac Co.

Heaters, Ventilating

Buffalo Forge Co.
Davis Emergency Equip. Co., Inc.
Dolge, C. B., Co.
Morrison-Pelsue Co.

Heating Pads

Karel First Aid Supply Co.
Mine Safety Appliances Co.
Safety First Supply Company

Helmets, Firemen's

American LaFrance
Boyer Campbell Div. White Sewing Machine Co.
Bullard, E. D., Co.
Fibre Metal Products Co., The
Fyrepel Products, Inc.
Fyr-Fyter Co., The
Gentex Corp.
Goodall Rubber Co.
Halprin Supply Co.
Mine Safety Appliances Co.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Willson Products Division

Helmets, Sandblast

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Maching Co.
Bullard, E. D., Co.
Chicago Eye Shield Co.
Fibre Metal Products Co., The
General Scientific Equipment Co.
Industrial Gloves Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pangborn Corp.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sawyer-Tower, Inc.
Sellstrom Manufacturing Co.
Standard Glove Co.
United States Rubber Co.
Willson Products Division
Willson Products Div., Ray-O-Vac Co.

Helmets, Welding

Air Reduction Sales Co.
American Industrial Safety Equip. Co.
American Optical Co., Safety Products Division
Auto View Welding Helmet Co.
Boyer Campbell Div. White Sewing Machine Co.
Bullard, E. D., Co.
Chicago Eye Shield Co.
Dockson Corp.
Eastern Safety Equip. Co., Inc.
Fibre Metal Products Co., The
General Scientific Equipment Co.
Jackson Prod., Air Reduction Sales Co., Div. of Air Reduction Co., Inc.
Kedman Co.
Kimball Safety Prod. Co.
Linde Co., Div. of Union Carbide Corp.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sellstrom Manufacturing Co.
Standard Glove Co.
Welsh Mfg. Co.
Wilkie Optical, Inc.
Willson Industrial Safety Equip.
Willson Products Division
Willson Products Div., Ray-O-Vac Co.

Herbicides

Brulin & Co., Inc.
Diamond Alkali Co.
Dow Chemical Co.
Du Pont De Nemours, E. I., & Co., Inc.
Geigy Agricultural Chemicals, Div. of Geigy Chemical Corp.
United States Borax & Chemical Corp.

Hoists, Chain

American Chain & Cable Co., Inc.
Boyer Campbell Div. White Sewing Machine Co.
Chance, A. B., Co.
Chisholm-Moore Hoist Division
Harrington Co., The
Jones & Laughlin Steel Corp.
Louden Machinery Co., The
Pennsylvania Sling Co.
Robbins & Myers, Inc.
Thern Machine Co.
Yale & Towne Mfg. Co., The

Hoists, Electric

American Chain & Cable Co., Inc.
Boyer Campbell Div. White Sewing Machine Co.
Chisholm-Moore Hoist Division
Harrington Co., The
Jones & Laughlin Steel Corp.
Louden Machinery Co., The
Pennsylvania Sling Co.
Robbins & Myers, Inc.
Yale & Towne Mfg. Co., The

Hoists, Manual

American Chain & Cable Co., Inc.
Boyer Campbell Div. White Sewing Machine Co.
Chisholm-Moore Hoist Division
Harrington Co., The
Louden Machinery Co., The
Morrison-Pelsue Co.
Pennsylvania Sling Co.
Robbins & Myers, Inc.
Thern Machine Co.
Yale & Towne Mfg. Co., The

Hoists, Pneumatic

Thor Power Tool Co.

Holder, Safety Spectacles

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Industrial Gloves Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.

Holders, Soldering Irons, Adjustable

LaGrange Machine Co.
Wilder Mfg. Co., Inc.

Hoods

Advance Glove Mfg. Co.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Chicago Eye Shield Co.
Eastern Safety Equip. Co., Inc.
Fibre Metal Products Co., The
General Scientific Equipment Co.
Industrial Gloves Co.
Kimball Safety Prod. Co.
Milburn Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sawyer-Tower, Inc.
Sellstrom Manufacturing Co.
Standard Glove Co.
Standard Safety Equipment Co.
Union Industrial Equip. Corp.
Wheeler Protective Apparel, Inc.
Willson Products Div., Ray-O-Vac Co.

Hoods, (Ventilating—Radiation)

Kewaunee Mfg. Co.

Hooks, Hoisting

American Chain & Cable Co., Inc.
Boyer Campbell Div. White Sewing Machine Co.
Columbus McKinnon Chain Div., Columbus McKinnon Corp.
Crosby-Laughlin Division, American Hoist & Derrick Co.
Harrington Co., The
Macwhyte Wire Rope Company
Marryatt-Lane and Co., Inc.
McKay Co., The
Newco Mfg. Co., Inc.
New Jersey Safety Equipment Co.
Pennsylvania Sling Co.
Safety First Supply Company
Taylor, S. G., Chain Co., Inc.

Hooks, Safety

American Chain & Cable Co., Inc.
Boyer Campbell Div. White Sewing Machine Co.
Bullard, E. D., Co.
Columbus McKinnon Chain Div., Columbus McKinnon Corp.
Harrington Co., The
Klein, Mathias, & Sons, Inc.
Macwhyte Wire Rope Company
Marryatt-Lane and Co., Inc.
McKay Co., The
Mentor Products, Inc.
Miller Equip. Co., Inc.
Newco Mfg. Co., Inc.
New Jersey Safety Equipment Co.
Pennsylvania Sling Co.
Safety First Supply Company
Taylor, S. G., Chain Co., Inc.
Union Wire Rope, Armco Steel Corp.
Upson Walton Co.

Hooks, Safety Belt

Atlas Safety Equip. Co., Inc.
Bashlin, W. H., Co.
Halprin Supply Co.
Miller Equip. Co., Inc.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Hose Bridge

Halprin Supply Co.

Hose Coupling

Thor Power Tool Co.

Hose, Line

American LaFrance
Fyr-Fyter Co., The
Gentex, C. D., Co.
Goodall Rubber Co.
Halprin Supply Co.
Rochester Fire Equip. Co.
Safety First Supply Company
Seco Safety Products Co.

Hose, Steam

American Biltrite Rubber Co., Boston Woven Hose & Rubber Division
Goodall Rubber Co.
Goodyear Tire & Rubber Co., The
Halprin Supply Co.
Penetone Co., The
Rochester Safety Equip. Co., Inc.
Snyder, W. L., & Son, Inc.
United States Rubber Co.

Hospital Equipment, Industrial

Corbin-Farnsworth, Inc.
Draeger Oxygen App. Corp.
Halperin, A. E., Co., Inc.
Huntington Laboratories, Inc.
Karel First Aid Supply Co.
Luxo Lamp Corp.
Mine Safety Appliances Co.
Oxygen Equipment & Service Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Stephenson Corp.
Surgical Mechanical Research, Inc.

See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Hydraulic Fluid, Fire Resistant

Celanese Chemical Co.

Hydrogen Analyzer

Davis Emergency Equip. Co., Inc.
Fisher Scientific Co.
New Jersey Safety Equipment Co.
Union Industrial Equip. Corp.

Ice Control Materials

Chem Industrial Co., The
Huntington Laboratories, Inc.
National Chemsearch Corp.
Rochester Safety Equip. Co., Inc.
Speco, Inc.
Union Carbide Consumer Products Co.
Walton-March

Identification Equipment

Brady, W. H., Co.
Embosograf Corp. of America
Mechanical Tags Systems Co.
Safety First Supply Company
Stephen-William Co.
Williams Jewelry & Mfg. Co.

Incentive Awards, Safety

Williams Jewelry & Mfg. Co.

Inclinators, Corbov

Boyer Campbell Div. White Sewing Machine Co.
Fisher Scientific Co.
General Scientific Equipment Co.
Morse Manufacturing Co., Inc.
New Jersey Safety Equipment Co.
Nutting Truck and Caster Co.
Thompson Mfg. Co.

Indicators, Carbon Monoxide

Bacharach Industrial Instrument Co.
Detectogas Instruments, Inc
Draeger Oxygen App. Corp.
Karel First Aid Supply Co.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Union Industrial Equip. Corp.
United States Safety Service Co.

Indicators, Flammable Vapors

Davis Emergency Equip. Co., Inc.
Johnson-Williams, Inc.
Karel First Aid Supply Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Notifier Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Union Industrial Equip. Corp.

Indicators, Gas

Davis Emergency Equip. Co., Inc.
Detectogas Instruments, Inc.
Draeger Oxygen App. Corp.
Johnson-Williams, Inc.
Karel First Aid Supply Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Notifier Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Union Industrial Equip. Corp.

Indicators, Oxygen Deficiency

Bacharach Industrial Instrument Co.
Boyer Campbell Div. White Sewing Machine Co.
Davis Emergency Equip. Co., Inc.
Milburn Co.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Indicators, Static

Detectogas Instruments, Inc.
Safety First Supply Company
United States Radium Corp.

Industrial Sound Control

Allied Witan Co., Inc.
DeBothezat Fans Div., American Machine and Metals, Inc.
Hansson, Elof, Inc.
Johns-Manville Corporation
Industrial Acoustics Co., Inc.
Rysdon Products Co., Noise Control Div.
Willson Industrial Safety Equip.

Industrial Tapes, Marking

Brady, W. H., Co.
Johns-Manville Corporation
Mine Safety Appliances Co.
Safety First Supply Company

Inhalators

Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Davis Emergency Equip. Co., Inc.
Globe Industries, Inc., Special Products Division
Halprin Supply Co.
Karel First Aid Supply Co.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Scott Aviation Corp.

Insecticides

Brulin & Co., Inc.
Dolge, C. B., Co.
Dow Chemical Co.
Du Pont De Nemours, E. I., & Co., Inc.
Geigy Agricultural Chemicals, Div. of Geigy Chemical Corp.
Halperin, A. E., Co., Inc.
Huntington Laboratories, Inc.
Johns-Manville Corporation
Johnson's Wax
National Chemsearch Corp.
Rochester Germicide Company
Suburban Products Co. of Pa.
United States Rubber Co.
West Chemical Products, Inc.

Insect Repellent

Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
Halperin, A. E., Co., Inc.
Johnson's Wax
Karel First Aid Supply Co.
Medical Supply Co.
Mine Safety Appliances Co.
National Mine Service Co.
Safety First Supply Company
The Pac-Kit Safety Equipment Co., Inc.

Insoles

Goodall Rubber Co.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Inspection, Machine & Parts

Magnaflux Corp.

Insulated Safety Links

Bullard, E. D., Co.
Safety First Supply Company

Intercommunication Equipment

National Mine Service Co.
New Jersey Safety Equipment Co.
Notifier Corp.
Willson Products Div., Ray-O-Vac Co.

Ionization Chamber, Alpha, Beta, Gamma

Atomic Accessories, Inc.
Kahl Scientific Instrument Corp.
Landsverk Electrometer Company
Riggs Nucleonics Corp.
Technical Associates
Tracerlab Inc.
Union Industrial Equip. Corp.

Ionization Chamber, Discriminating

Atomic Accessories, Inc.
Kahl Scientific Instrument Corp.
Landsverk Electrometer Company
Technical Associates
Tracerlab Inc.
Union Industrial Equip. Corp.

Ionization Chamber, Fast Neutron

Atomic Accessories, Inc.
Kahl Scientific Instrument Corp.
Technical Associates
Tracerlab Inc.
Union Industrial Equip. Corp.

Jackets, Life, Industrial

American Optical Co., Safety Products Div.
Gentex Corp.
Herculite Protective Fabrics
Muter Co., The
Pendergast, Albert W., Safety Equipment Co.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.

Keys, Safety Chuck

Lummis Mfg. Co.

Knives, Safety

Flash Mfg. Co.
Genter, C. D., Co.
New Jersey Safety Equipment Co.
Safety Clothing and Equipment Co.
Safety First Supply Company

Labels, Adhesive

Brady, W. H., Co.
Safety First Supply Company
Western Lithograph Co., Westline Products Division

Ladders, Aluminum

Aluminum Ladder Co.
American LaFrance
Babcock, W. W., Co., Inc.
Ballymore Company
Bauer Mfg. Co., The
Duo-Safety Ladder Corp.
Goshen Mfg. Co., Inc.
Marryatt-Lane and Co., Inc.
Putnam Rolling Ladder Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Patent Scaffolding Co., Inc., The
Werner, R. D., Co., Inc.

Ladder Climbers

Bauer Mfg. Co., The
Rochester Safety Equip. Co., Inc.
Rose Mfg. Co.
Safety First Supply Company

Ladders, Fiberglass

Aluminum Ladder Co.
American Allsafe Co., Inc.
Bauer Mfg. Co., The
Chance, A. B., Co.
Himco
New Jersey Safety Equipment Co.
Putnam Rolling Ladder Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Truck Equip. Co.

Ladders, Marine

Aluminum Ladder Co.
Cleveland Ladder Co., Inc.
Duo-Safety Ladder Corp.
Marryatt-Lane and Co., Inc.
The Patent Scaffolding Co., Inc.

Ladders, Rolling

Aluminum Ladder Co.
Ballymore Company
Cleveland Ladder Co., Inc.
Cotterman, I. D.
Dayton Safety Ladder Co., The
Marryatt-Lane and Co., Inc.
Putnam Rolling Ladder Co., Inc.
Rochester Safety Equip. Co., Inc.
Safe-Lad Manufacturing Co.
Safety First Supply Company
The Patent Scaffolding Co., Inc.

Ladder Shoes or Feet

Aluminum Ladder Co.
American Mason Safety Tread Co.
American Optical Co., Safety Products Div.
Babcock, W. W., Co., Inc.
Bauer Mfg. Co., The
Boyer Campbell Div. White Sewing Machine Co.
Dayton Safety Ladder Co., The
Duo-Safety Ladder Corp.
Goshen Mfg. Co., Inc.
Hillyard Chemicals
Himco
Johnson Ladder Shoe Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Rose Mfg. Co.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.
Standard Safety Equipment Co.
The Patent Scaffolding Co., Inc.
Werner, R. D., Co., Inc.

Ladders, Tower Safety

Dayton Safety Ladder Co., The
Duo-Safety Ladder Corp.
Economy Engineering Co.
Fyr-Fyter Co., The
Himco
Marryatt-Lane and Co., Inc.
Rose Mfg. Co.
Safety Tower Ladder Co., Inc.
The Patent Scaffolding Co., Inc.
Truck Equip. Co.

Lamp, Adjustable

Luxo Lamp Corp.
Swivelier Company, Inc.

Lamps, Emergency

Boyer Campbell Div. White Sewing Machine Co.
Carpenter Mfg. Co.
Dietz, R. E., Co.
Electric Storage Battery Co., The, Industrial Market Division
Fyr-Fyter Co., The
Halprin Supply Co.
Joy Mfg. Co., Electrical Prod. Div.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Rockwood Sprinkler Co.
Safety First Supply Company
Standard Glove Co.
Swivelier Company, Inc.
Sylvania Electric Products, Inc.
Tedcar Products Co.
U-C-Lite Manufacturing Co.
United States Radium Corp.

See *SAFETY PRODUCTS SOURCES for addresses*

Safety Products Index

Lamp Extension

Ericson Manufacturing Co., The
Luxo Lamp Corp.
McGill Mfg. Co., Inc.

Lamps, Explosion Proof

Boyer Campbell Div. White Sewing Machine Co.
Browne, Stewart R., Mfg. Co., Inc.
Carpenter Mfg. Co.
Davis Emergency Equip. Co., Inc.
Ericson Manufacturing Co., The
Halprin Supply Co.
Joy Mfg. Co., Electrical Prod. Div.
Karel First Aid Supply Co.
McGill Mfg. Co., Inc.
National Mine Service Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Sylvania Electric Products, Inc.

Lamps, Miners'

Davis Emergency Equip. Co., Inc.
Mine Safety Appliances Co.
National Mine Service Co.
Rochester Safety Equip. Co., Inc.
Standard Glove Co.

Lamps, Portable Electric

Ericson Manufacturing Co., The
Genter, C. D., Co.
Joy Mfg. Co., Electrical Prod. Div.
Justrite Mfg. Co.
Luxo Lamp Corp.
McGill Mfg. Co., Inc.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Swivelier Company, Inc.
Tedcar Products Co.
U-C-Lite Manufacturing Co.

Lamps, Safety

American Optical Co., Safety Products Div.
Davis Emergency Equip. Co., Inc.
Mine Safety Appliances Co.
National Mine Service Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Sylvania Electric Products, Inc.
Tedcar Products Co.
U-C-Lite Manufacturing Co.
United States Radium Corp.

Lamps, Vapor Proof

Boyer Campbell Div. White Sewing Machine Co.
Browne, Stewart R., Mfg. Co., Inc.
Carpenter Mfg. Co.
Ericson Manufacturing Co., The
Halprin Supply Co.
Joy Mfg. Co., Electrical Prod. Div.
McGill Mfg. Co., Inc.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Standard Glove Co.
Stonco Electric Products Co.
Sylvania Electric Products, Inc.

Lanterns, Carbide

Genter, C. D., Co.
Justrite Mfg. Co.
Rochester Safety Equip. Co., Inc.

Lanterns, Electric

Genter, C. D., Co.
Justrite Mfg. Co.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Tedcar Products Co.
U-C-Lite Manufacturing Co.

Lanyards

Bashlin, W. M., Co.
Boyer Campbell Div. White Sewing Machine Co.
Buhrke, R. H., Co.
Jay, D., Products Co., Inc.
Miller Equip. Co., Inc.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company

Laundry Equipment, Radioactive

Technical Associates

Leak Testing Solution

Flamort Chemical Co., Inc.

Leather Preserver, Water Repellent

Bashlin, W. M., Co.
Miller Equip. Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Leathers, Hand

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
Allied Glove Corp.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Dunn Products
General Scientific Equipment Co.
Industrial Gloves Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Plasco Safety Products Co.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Singer Glove Manufacturing Co.
Standard Glove Co.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.

Leggings

Advance Glove Mfg. Co.
Allied Glove Corp.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Dunn Products
Elwood Safety Appliance Co.
General Scientific Equipment Co.
Goodall Rubber Co.
Industrial Gloves Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Plasco Safety Products Co.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Sawyer-Tower, Inc.
Singer Glove Manufacturing Co.
Standard Glove Co.
Wheeler Protective Apparel, Inc.

Lens, Industrial

American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Bausch & Lomb Inc.
Boyer Campbell Div. White Sewing Machine Co.
Chicago Eye Shield Co.
Dockson Corp.
Eastern Safety Equip. Co., Inc.
Fendall Co.
Glendale Optical Co., Inc.
Kimball Safety Prod. Inc.
Mine Safety Appliances Co.
Pioneer Scientific Co., Division of Bausch & Lomb Inc.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Sellstrom Manufacturing Co.
Titmus Optical Co., Inc.
United States Safety Service Co.
Watchemoket Optical Co.
Welsh Mfg. Co.
Wilkie Optical, Inc.
Willson Products Div., Ray-O-Vac Co.

Lens, Inspection

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
Safety First Supply Company
Watchemoket Optical Co.
Willson Products Div., Ray-O-Vac Co.

Lens, Prescription

American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Chicago Eye Shield Co.
Fendall Co.
Glendale Optical Co., Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
Pioneer Scientific Co., Division of Bausch & Lomb Inc.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Sellstrom Manufacturing Co.
Standard Glove Co.
Titmus Optical Co., Inc.
United States Safety Service Co.
Welsh Mfg. Co.
Wilkie Optical, Inc.
Willson Products Div., Ray-O-Vac Co.

Lifeline Lock, Scaffolding, Swings

Rose Mfg. Co.
Safety First Supply Company
Safety Tower Ladder Co., Inc.
Werner, R. D., Co., Inc.

Lifters, Vacuum

Atlantic India Rubber Works, Inc.
Boyer Campbell Div. White Sewing Machine Co.
Genter, C. D., Co.
Littell, F. J., Machine Co., Vac-u-matian Division
Pendergast, Albert W., Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.

Lifting Equipment, Industrial

Baker Industrial Trucks--A Division of Otis Elevator Co.
Clark Equip. Co., Industrial Truck Div.
Downs Crane & Hoist Co.
Hamilton Tool Company, The
Jones & Laughlin Steel Corp.
Pennsylvania Sling Co.
Safety First Supply Company
Sterling-Fleischman Co.
Truck Equip. Co.
Yale & Towne Mfg. Co., The

Lifts, Aerial

Truck Equip. Co.

Lighting, Emergency

Boyer Campbell Div. White Sewing Machine Co.
Carpenter Mfg. Co.
Crouse-Hinds Co.
Dietz, R. E., Co.
Electro Powerpacs Inc.
General Scientific Equipment Co.
Gould-National Batteries, Inc., NICAD Division
Karel First Aid Supply Co.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Stonco Electric Products Co.
Swivelier Company, Inc.
Tedcar Products Co.
The Standard Electric Time Co.
United States Radium Corp.
Willson Products Div., Ray-O-Vac Co.

Lighting Equipment, Industrial

Electric Storage Battery Co., The, Industrial Market Division
Luxo Lamp Corp.
Rochester Safety Equip. Co., Inc.
Stonco Electric Products Co.
Swivelier Company, Inc.
Sylvania Electric Products, Inc.
Trippe Mfg. Co.
Wasco Products, Inc.

Lighting Units, Portable

Boyer Campbell Div. White Sewing Machine Co.
Browne, Stewart R., Mfg. Co., Inc.
Carpenter Mfg. Co.
Dietz, R. E., Co.
Electro Powerpacs Inc.
Joy Mfg. Co., Electrical Prod. Div.
Justrite Mfg. Co.
McGill Mfg. Co., Inc.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Stonco Electric Products Co.
Swivelier Company, Inc.
Willson Products Div., Ray-O-Vac Co.

Lights, Emergency, Battery

American Dryer Corporation
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bright Star Industries
Carpenter Mfg. Co.
Dietz, R. E., Co.
Electric Storage Battery Co., The, Industrial Market Division
Electro Powerpacs Inc.
Fyr-Fyter Co., The
Halprin Supply Co.
Justrite Mfg. Co.
Karel First Aid Supply Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Tedcar Products Co.
The Standard Electric Time Co.
West Side Iron Works, Inc.
Willson Products Div., Ray-O-Vac Co.

Lights, Emergency Vehicle

Buckeye Fire Dept. Equip.
Carpenter Mfg. Co.
Dietz, R. E., Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Tedcar Products Co.
Trippe Mfg. Co.

Lights, Warning

Carpenter Mfg. Co.
Dietz, R. E., Co.
Electric Storage Battery Co., The, Industrial Market Division
Federal Sign and Signal Corp.
Justrite Mfg. Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.

Continued on next page

See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Safety First Supply Company
Sylvania Electric Products, Inc.
Tedcar Products Co.
Trippe Mfg. Co.
United States Radium Corp.

Line Construction Equipment and Tools

Chance, A. B., Co.
Charleston Rubber Co.
Harrington Co., The
Klein, Mathias, & Sons, Inc.
Miller Equip. Co., Inc.
Truck Equip. Co.

Line Markers

Boyer Campbell Div. White Sewing Machine Co.
General Scientific Equipment Co.
Hillyard Chemicals
Jay, D., Products Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.

Lineman's Bags

Advance Glove Mfg. Co.
Bashlin, W. H., Co.
Boyer Campbell Div. White Sewing Machine Co.
Burke, R. H., Co.
Charleston Rubber Co.
Davis Emergency Equip. Co., Inc.
Goodall Rubber Co.
Herculite Protective Fabrics
Industrial Gloves Co.
John E. Dorsey Co.
Jomac Inc.
Kennedy-Ingalls Inc.
Klein, Mathias, & Sons, Inc.
Miller Equip. Co., Inc.
Mine Safety Appliances Co.
Racine Glove Co., Inc.
Re-Mar Products Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Salisbury, W. H., & Co.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Surety Rubber Co.

Lineman's Rubber Protective Devices

Advance Glove Mfg. Co.
Boyer Campbell Div. White Sewing Machine Co.
Chance, A. B., Co.
Charleston Rubber Co.
Goodall Rubber Co.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Salisbury, W. H., & Co.
Standard Glove Co.
Surety Rubber Co.

Load Binders

Broderick & Bascom Rope Co.
Canton Manufacturing Co., Inc.
Crosby-Laughlin Division, American Hoist & Derrick Co.
McKay Co., The
Newco Mfg. Co., Inc.
Pennsylvania Sling Co.

Lockers and Hangers for Clothing

Safety First Supply Company

Lock-Outs, Electric Switch

Boyer Campbell Div. White Sewing Machine Co.
Micro Switch, Division of Minneapolis-Honeywell Regulator Co.
New Jersey Safety Equipment Co.
Osborn Mfg. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Standard Safety Equipment Co.

Maintenance Towers

Economy Engineering Co.
Truck Equip. Co.
Universal Mfg. Corp.

Magnetic Feeding & Lifting Devices

Multifinish Mfg. Co., Magnetool Div.
Nielsen, E. V.

Magnifiers

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
General Scientific Equipment Co.
Glendale Optical Co., Inc.
Karel First Aid Supply Co.
Luxo Lamp Corp.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Wilkie Optical, Inc.
Willson Products Div., Ray-O-Vac Co.

Mallets, Rubber

Johnson Ladder Shoe Co. Inc.

Manhole Guards, Covers

Frommelt Industries Inc.
Irving Subway Grating Co., Inc.

Manhole Guard Covers

Plastimayd Corporation

Manhole Ventilators

Morrison-Pelsue Co.

Markers, Traffic Line

American-Marietta Co.
Bridgeport Industrial Products, Inc.
Campro Products, Inc.
General Scientific Equipment Co.
Hillyard Chemicals
Jay, D., Products Co., Inc.
M-B Corporation
Minnesota Mining & Mfg. Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Penetone Co., The
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Trucson Laboratories
Western Lithograph Co., Westline Products Division

Mask, Abrasive Blasting

American Industrial Safety Equip. Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Bullard, E. D., Co.
Chicago Eye Shield Co.
Draeger Oxygen App. Corp.
Eastern Safety Equip. Co., Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Willson Products Div., Ray-O-Vac Co.

Masks, Acid Gas

Acme Protection Equip. Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
Draeger Oxygen App. Corp.
General Scientific Equipment Co.
Halprin Supply Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Willson Products Div., Ray-O-Vac Co.

Masks, All-Service

Acme Protection Equip. Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
Draeger Oxygen App. Corp.
Fyr-Fyter Co., The
General Scientific Equipment Co.
Halprin Supply Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Snyder, M. L., & Son, Inc.
Willson Products Div., Ray-O-Vac Co.

Masks, Ammonia Gas

Acme Protection Equip. Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
Draeger Oxygen App. Corp.
General Scientific Equipment Co.
Halprin Supply Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Snyder, M. L., & Son, Inc.
Willson Products Div., Ray-O-Vac Co.

Masks, Babbitting

Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Chicago Eye Shield Co.
Draeger Oxygen App. Corp.
Fibre Metal Products Co., The
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Willson Products Div., Ray-O-Vac Co.

Masks, Carbon Monoxide

Acme Protection Equip. Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Davis Emergency Equip. Co., Inc.
Draeger Oxygen App. Corp.
Halprin Supply Co.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Scott Aviation Corp.
Standard Glove Co.
Willson Products Div., Ray-O-Vac Co.

Masks, Gas, Radioactive

Acme Protection Equip. Co.
Bridgeport Industrial Products, Inc.
Draeger Oxygen App. Corp.
Ganter, C. D., Co.
Kahl Scientific Instrument Corp.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Safety First Supply Company
Scott Aviation Corp.
Standard Glove Co.
Tracerlab Inc.

Masks, Gas, Welding

Acme Protection Equip. Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Chicago Eye Shield Co.
Draeger Oxygen App. Corp.
Fibre Metal Products Co., The
General Scientific Equipment Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Scott Aviation Corp.
Standard Glove Co.
Willson Products Division
Willson Products Div., Ray-O-Vac Co.

Masks, Hose (Fresh Air)

Acme Protection Equip. Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Bullard, E. D., Co.
Chicago Eye Shield Co.
Davis Emergency Equip. Co., Inc.
Draeger Oxygen App. Corp.
Fibre Metal Products Co., The
Halprin Supply Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Scott Aviation Corp.
Standard Glove Co.
Willson Products Div., Ray-O-Vac Co.

Masks, Hose (Supplied Air)

Acme Protection Equip. Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Bullard, E. D., Co.
Chicago Eye Shield Co.
Davis Emergency Equip. Co., Inc.
Draeger Oxygen App. Corp.
Halprin Supply Co.
Industrial Gloves Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Scott Aviation Corp.
Standard Glove Co.

Masks, Organic Vapor

Acme Protection Equip. Co.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
Dockson Corp.
Draeger Oxygen App. Corp.
General Scientific Equipment Co.
Halprin Supply Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Willson Products Div., Ray-O-Vac Co.

Matches, Safety Promotion

Hornick, Frederick
Universal Match Corp.

Materials Handling Devices

Baker Industrial Trucks—A Division of Otis Elevator Co.
Clark Equip. Co., Industrial Truck Div.
Downs Crane & Hoist Co.

See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Fairbanks Co., The
Hamilton Caster & Mfg. Co., The
Hamilton Tool Company, The
Harrington Co., The
Jones & Laughlin Steel Corp.
Link-Belt Co.
Yagline, Inc.
Mefco Sales & Service, Inc.
Merrill Brothers
Miller Equip. Co., Inc.
Nutting Truck and Caster Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Thompson Mfg. Co.
Yale & Towne Mfg. Co., The

Mats

American Allsafe Co., Inc.
American Mat Corp.
Boyer Campbell Div. White Sewing Machine Co.
Goodall Rubber Co.
Hercules Protective Fabrics
Irving Subway Grating Co., Inc.
Mellflex Products Co., Inc.
Moore, Samuel, & Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Salisbury, W. H., & Co.
Snyder, M. L., & Son, Inc.
Wear Proof Mat Co.

Matting, Floor and Stair

American Allsafe Co., Inc.
American Silbrite Rubber Co., Boston Woven Hose & Rubber Division
American Mat Corp.
B. F. Goodrich Flooring Products
Goodall Rubber Co.
Goodyear Tire & Rubber Co., The
Mellflex Products Co., Inc.
Moore, Samuel, & Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Salisbury, W. H., & Co.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
United States Rubber Co.
Wear Proof Mat Co.

Meals, Rubber

Genter, C. D., Co.
Safety First Supply Company

Meals, Wood

Safety First Supply Company

Measuring Device, Foot

Goodall Rubber Co.
Record Industrial Co.

Megaphones, transistor-powered

Audio Equipment Co., Inc.
Halprin Supply Co.
Holmin, W. A., Corp.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Union Industrial Equip. Corp.

Meter, Sound-Survey

Mine Safety Appliances Co.
Scott, H. H., Inc., Instrument Division

Mirrors, Plant Traffic

Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Brossard, Lester L., Co.
General Scientific Equipment Co.
New Jersey Safety Equipment Co.
Norman Industries, Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Silver, Fred, Inc.

Mittens, Radiation

Charleston Rubber Co.
Du Pont De Nemours, E. I., & Co., Inc.
Genter, C. D., Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Tracerlab Inc.

Mobile First Aid Equipment

Draeger Oxygen App. Corp.
Halperin, A. E., Co., Inc.
Karel First Aid Supply Co.
Safety First Supply Company
Stephenson Corp.

Monitor, Radio-Aerosol

Gelman Instrument Co.
Tracerlab Inc.

Mop Truck

Finnell System, Inc.
Hillyard Chemical Co.

Mowers, Lawn Industrial

American Chain & Cable Co., Inc.
Mott Corporation

Nets, Rope Safety

Bullard, E. D., Co.
Jay, D., Products Co., Inc.
Marryatt-Lane and Co., Inc.
Miller Equip. Co., Inc.
Rose Mfg. Co.
Safety First Supply Company

Noise Control

Allied Witan Co., Inc.
B. F. Goodrich Flooring Products
Burgess-Manning Co.
Cordo Chemical Corp.
Corlett-Turner Co.
DeBothezat Fans Div., American Machine and Metals, Inc.
Hansson, Eliof, Inc.
Industrial Acoustics Co., Inc.
Mine Safety Appliances Co.
Rysdon Products Co., Noise Control Div.
Sigma Engineering Co.

Non-Sparking Tools

Beryllium Corp., The
Boyer Campbell Div. White Sewing Machine Co.
Genter, C. D., Co.
Morse Manufacturing Co., Inc.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Nozzles

Akron Brass Mfg. Co., Inc.
Alton, W. D., Manufacturing Co.
American LaFrance
Ansul Chemical Co.
Bean John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Buckeye Fire Dept. Equip.
Fyr-Fyter Co., The
Halprin Supply Co.
National Foam System, Inc.
Rochester Fire Equip. Co.
Safety First Supply Company
Seco Safety Products Co.
Tokheim Corp.
West Chemical Products, Inc.

Observers, Safety

Sticht, Norman H., Co., Inc.

Overshoes, Neoprene, Non-Slip

Dunn Products
Goodall Rubber Co.
Goodrich, B. F. Footwear Products
Hood Rubber Products
Iron Age Safety Shoe Div., H. Childs & Co., Inc.
John E. Dorsey Co.
New Jersey Safety Equipment Co.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Tingley Rubber Corp.
Wash-Rite Co., Inc.

Overshoes, Rubber, Non-Slip

Beacon Falls Rubber Footwear
Dunn Products
Goodall Rubber Co.
Goodrich, B. F. Footwear Products
Hood Rubber Products
Iron Age Safety Shoe Div., H. Childs & Co., Inc.
Midwest Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Sawyer-Tower, Inc.
Snyder, M. L., & Son, Inc.
Tingley Rubber Corp.
Wash-Rite Co., Inc.

Oxygen Breathing Apparatus

American LaFrance
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Draeger Oxygen App. Corp.
E & J - See Ohio Chemical Co.
Fisher Scientific Co.
Fluid Power Inc.
Fyr-Fyter Co., The
Globe Industries, Inc., Special Products Division
Halprin Supply Co.
Karel First Aid Supply Co.
Linde Co., Div. of Union Carbide Corp.
Metrox, Inc.
Mine Safety Appliances Co.
Monaghan, J. J., Co., Inc.
New Jersey Safety Equipment Co.
Oxy-Gear Inc.
Portable Oxygen Company
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Oxygen Recorders

Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Oxygen Therapy Apparatus

Air Reduction Sales Co.
Draeger Oxygen App. Corp.
E & J - See Ohio Chemical Co.
Fluid Power Inc.
Globe Industries, Inc., Special Products Division
Halperin, A. E., Co., Inc.
Karel First Aid Supply Co.
Linde Co., Div. of Union Carbide Corp.
Metrox, Inc.
Mine Safety Appliances Co.
Monaghan, J. J., Co., Inc.
Oxy-Gear Inc.
Oxygen Equipment & Service Co.
Portable Oxygen Company
Safety First Supply Company
Scott Aviation Corp.
Stephenson Corp.

Padlocks

Master Lock Company

Pads, Knee

Advance Glove Mfg. Co.
Allied Glove Corp.
Boyer Campbell Div. White Sewing Machine Co.
Dunn Products
Ellwood Safety Appliance Co.
Industrial Gloves Co.
Kennedy-Ingalls Inc.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
National Mine Service Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Singer Glove Manufacturing Co.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Wheeler Protective Apparel, Inc.

Pads, Miners'

Advance Glove Mfg. Co.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Safety First Supply Company

Paint, Abrasive Resurfacing

American Abrasive Metals Co.
Gumsall Rubber Co.
Legge, Walter G., Co., Inc.
Magnus Chemical Co., Inc.
Mine Safety Appliances Co.
Safety First Supply Company
Pittsburgh Plate Glass Co.

Paint, Color Coding

Chem Industrial Co., The
Du Pont De Nemours, E. I., & Co., Inc.
Frost Paint and Oil Corp.
Glidden Company, The
Hillyard Chemicals
Hillyard Chemical Co.
Kelly, The, Paint Co.
Speco, Inc.
Truscon Laboratories

Paint, Fire Resistant

Albi Mfg. Co., Inc.
Alm Corp.
Du Pont De Nemours, E. I., & Co., Inc.
Flamort Chemical Co., Inc.
Glidden Company, The
Kelly, The, Paint Co.
Rochester Fire Equip. Co.

Paint, Fluorescent, Safety

Bullard, E. D., Co.
Du Pont De Nemours, E. I., & Co., Inc.
Kelly, The, Paint Co.
Lawter Chemicals, Inc.
Minnesota Mining & Mfg. Co.
National Chemsearch Corp.
Radiant Color Co.
Safety First Supply Company
Switzer Brothers, Inc.

Paint, Non-Skid

Charleston Rubber Co.
Du Pont De Nemours, E. I., & Co., Inc.
Frost Paint and Oil Corp.
Kelly, The, Paint Co.
Legge, Walter G., Co., Inc.
Magnus Chemical Co., Inc.
Mine Safety Appliances Co.
Oil-Dri Corporation of America
Pendergast, Albert W., Safety Equipment Co.
Penetone Co., The
Safety First Supply Company
Silicone Paper Co. of America Inc., The
Walton-March

Paint, Reflectorized

Bullard, E. D., Co.
Glidden Company, The
Mine Safety Appliances Co.

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See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Safety First Supply Company

Parts Cleaning Equipment

Kelite Corp.
Magnus Chemical Co., Inc.
Oakite Products, Inc.
Penetone Co., The
Practical Mfg. Co.
Protectoseal Co., The
Rochester Safety Equip. Co., Inc.
Turco Products, Inc.
Wheelabrator Corp.

Pins, Safety Award

Hornik, Frederick
The Metal Arts Co., Inc.
Williams Jewelry & Mfg. Co.

Pipe Markers

American Allsafe Co., Inc.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Cunningham, M. E., Company
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Truscon Laboratories
Universal Valve Co.
Western Lithograph Co., Westline Products Division

Plaques, Safety

Emblem & Badge Mfg. Co.
Embosograf Corp. of America
Hornik, Frederick
Patent Scaffolding Co., Inc., The
Williams Jewelry & Mfg. Co.

Plastics for Shields and Guards

Boyer Campbell Div. White Sewing Machine Co.
Dockson Corp.
Genter, C. D., Co.
Plastimayd Corporation

Platforms, Scaffold

Ballymore Company
Bauer Mfg. Co., The
Beaver-Advance Corporation
Cleveland Ladder Co., Inc.
Duo-Safety Ladder Corp.
Pendergast, Albert W., Safety Equipment Co.
Safety First Supply Company
Universal Mfg. Corp.
Werner, R. D., Co., Inc.

Platforms, Unloading

Irving Subway Grating Co., Inc.
Magline, Inc.
Nichols Engineering Company, The

Platforms, Window Washing

Little Giant Window Bracket Co.

Poison Ivy Treatments

Bullard, E. D., Co.
By's Inc.
Halperin, A. E., Co., Inc.
Karel First Aid Supply Co.
Medical Supply Co.
Mine Safety Appliances Co.
National Mine Service Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
The Pac-Kit Safety Equipment Co., Inc.

Pole Grip, Safety

Himco
Rochester Safety Equip. Co., Inc.
Rose Mfg. Co.
Safety Clothing and Equipment Co.
Safety First Supply Company

Portable Battery (Radiation Detection)

Controls for Radiation, Inc.
Kahl Scientific Instrument Corp.
Technical Associates
Tracerlab Inc.

Poster Service, Safety

Elliott Service Co., Inc.
Safety First Supply Company
Stephen-William Co.
Whitney, L. A., Assoc., Inc.

Power Machine, Electric Control

Searjeant Metal Products, Inc.

Power Press, Safety Control Kits

Micro Switch, Division of Minneapolis-Honeywell Regulator Co.
Searjeant Metal Products, Inc.

Pressure Relief Devices

Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Black, Sivalls & Bryson, Inc.
Draeger Oxygen App. Corp.
Prenco Mfg. Co.
Protectoseal Co., The
Rochester Fire Equip. Co.
Vapor Recovery Systems Co.
Wasco Products, Inc.

Projector, Automatic and Continuous

American Optical Co., Safety Products Div.
Eastman Kodak Co.
La Belle Industries, Inc.
Porto-Clinic Instruments, Inc.

Projectors, Film Strip

Eastman Kodak Co.
International Film Bureau, Inc.
La Belle Industries, Inc.

Projectors, Motion Picture

Eastman Kodak Co.
General Precision, Inc., GPL Division

Projectors, Overhead

American Optical Co., Safety Products Div.
Keystone View Co.
Porto-Clinic Instruments, Inc.

Projectors, Sound Slidefilm

International Film Bureau, Inc.
La Belle Industries, Inc.

Proportional Counter, Neutrons

Radiation Counter Laboratories, Inc.
Technical Associates
Tracerlab Inc.
Union Industrial Equip. Corp.

Protectors, Arm

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Dunn Products
General Scientific Equipment Co.
Industrial Gloves Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Plasco Safety Products Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Singer Glove Manufacturing Co.
Standard Glove Co.
Wheeler Protective Apparel, Inc.

Protectors, Ear

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Clark, David, Co., Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Protecto Ear Plugs, Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety Ear Protector Co.
Safety First Supply Company
Sigma Engineering Co.
Standard Glove Co.
Surgical Mechanical Research, Inc.
Wilkie Optical, Inc.
Willson Products Division
Willson Products Div., Ray-O-Vac Co.

Protectors, Finger

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Dunn Products
General Bandages, Inc.
General Scientific Equipment Co.
Industrial Gloves Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Plasco Safety Products Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Singer Glove Manufacturing Co.
Standard Glove Co.
Standard Safety Equipment Co.
Tool & Manufacturing Co., Inc., The
Wash-Rite Co., Inc.
Wheel Protective Apparel, Inc.
Wilson Rubber Co., The, Div. of Becton, Dickinson & Co.

Protectors, Knee

Advance Glove Mfg. Co.
Dunn Products
Ellwood Safety Appliance Co.
General Scientific Equipment Co.
Industrial Gloves Co.
Johnson Ladder Shoe Co., Inc.
Kennedy-Ingalls Inc.
Midwest Glove Co., Inc.
National Mine Service Co.
New Jersey Safety Equipment Co.
Mine Safety Appliances Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Standard Glove Co.
Wheeler Protective Apparel, Inc.

Protectors, Lineman's

Advance Glove Mfg. Co.
Allied Glove Corp.
Bashlin, W. H., Co.
Boyer Campbell Div. White Sewing Machine Co.
Charleston Rubber Co.
Davis Emergency Equip. Co., Inc.
Industrial Gloves Co.
Kennedy-Ingalls Inc.
Klein, Mathias, & Sons, Inc.
Midwest Glove Co., Inc.
Miller Equip. Co., Inc.
Mine Safety Appliances Co.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Sager Glove Corp., The
Salisbury, W. H., & Co.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Surety Rubber Co.
Wash-Rite Co., Inc.

Public Address Systems

Holmin, W. A., Corp.
Rochester Fire Equip. Co.

Publications, Radiation

Controls for Radiation, Inc.
Noise Control

Pullers, Cable

Bashlin, W. H., Co.

Pullers, Fuse

Boyer Campbell Div. White Sewing Machine Co.

Pumps, Acid

American LaFrance
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Diener Industries Inc.
General Scientific Equipment Co.
Goodyear Pumps Inc.
Handling Devices Co., Inc.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Thompson Mfg. Co.
Tokheim Corp.

Pumps, Foam

Akron Brass Mfg. Co., Inc.
American LaFrance
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Diener Industries Inc.
Goodyear Pumps Inc.
Halprin Supply Co.
National Foam System, Inc.
Rochester Fire Equip. Co.
Safety First Supply Company

Pumps, Hand Operated

American LaFrance
Blackmer Pump Co.
General Fire Extinguisher Corp.
General Scientific Equipment Co.
Diener Industries Inc.
Draeger Oxygen App. Corp.
New Jersey Safety Equipment Co.
Practical Mfg. Co.
Thompson Mfg. Co.
Tokheim Corp.

Pumps, High Pressure

Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Buffalo Forge Co.
Handling Devices Co., Inc.
New Jersey Safety Equipment Co.
Robbins & Myers, Inc.
Rochester Fire Equip. Co.

Pumps, Oxygen

Draeger Oxygen App. Corp.
Karel First Aid Supply Co.
Mine Safety Appliances Co.
Safety First Supply Company

Radiography Equipment

Charleston Rubber Co.

See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Radionics, Inc.
St. John X-Ray Laboratory
Tracerlab Inc.

Racks, Barrel

Boyer Campbell Div. White Sewing Machine Co.
General Scientific Equipment Co.
Hamilton Caster & Mfg. Co., The
Hollaender Mfg. Co., The
Morse Manufacturing Co., Inc.
Nutting Truck and Caster Co.
Rochester Safety Equip. Co., Inc.
Standard Safety Equipment Co.

Racks, Fire Hose

Allen, W. D., Manufacturing Co.
American LaFrance
Halprin Supply Co.
Hannay, Clifford B., & Son, Inc.
General Fire Extinguisher Corp.
Genter, C. D., Co.
National Foam System, Inc.
Rochester Fire Equip. Co.
Safety First Supply Company
Seco Safety Products Co.

Radio, Two-Way Portable

Seismograph Service Corp.

Rail Punch

Mine Safety Appliances Co.

Ramps and Runways

Irving Subway Grating Co., Inc.
Magline, Inc.

Ramps and Runways

Magline, Inc.

Reactor Guard

Safeguard Mfg. Co.

Recorders, Radiation

Atomic Accessories, Inc.
Controls for Radiation, Inc.
Gelman Instrument Co.
Leeds & Northrup Co.
Nuclear Measurements Corp.
Radiation Counter Laboratories, Inc.
Technical Associates
Tracerlab Inc.

Reducers, Speed

Boyer Campbell Div. White Sewing Machine Co.
Link-Belt Co.

Reels, Cable

Hannay, Clifford B., & Son, Inc.
Macwhyte Wire Rope Company
Union Wire Rope, Armco Steel Corp.

Reels, Static Discharge

Ericson Manufacturing Co., The
Hannay, Clifford B., & Son, Inc.

Reels, Welding Hose

Hannay, Clifford B., & Son, Inc.

Reels, Wire

Bashlin, W. M., Co.
Chance, A. B., Co.
Hannay, Clifford B., & Son, Inc.
Macwhyte Wire Rope Co.
Union Wire Rope, Armco Steel Corp.

Reflectors, Lamp

Genter, C. D., Co.
Vari-Products Co.

Regulators, Gas

Air Reduction Sales Co.
Dockson Corp.
Draeger Oxygen App. Corp.
Genter, C. D., Co.
Fisher Scientific Co.

Rescue Apparatus, Diving and Underwater

Draeger Oxygen App. Corp.
Safety First Supply Company

Rescue Suits

Advance Glove Mfg. Co.
Fyrepel Products, Inc.
Halprin Supply Co.
Industrial Gloves Co.
Mine Safety Appliances Co.
Pulmosan Safety Equip. Corp.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Wheeler Protective Apparel, Inc.

Respirators, Air-Line

Acme Protection Equip. Co.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Draeger Oxygen App. Corp.
Globe Industries, Inc., Special Products Division
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Scott Aviation Corp.
Willson Industrial Safety Equip.
Willson Products Div., Ray-O-Vac Co.

Respirators, Dust, Acid Fume, Smoke

American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Chicago Eye Shield Co.
Dockson Corp.
Draeger Oxygen App. Corp.
Dunn Products
Eastern Safety Equip. Co., Inc.
Fyr-Fyter Co., The
General Scientific Equipment Co.
Glendale Optical Co., Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Wilson Industrial Safety Equip.
Willson Products Div., Ray-O-Vac Co.

Respirators, Dust-Lead

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Chicago Eye Shield Co.
DeVilbiss Co.
Dockson Corp.
Draeger Oxygen App. Corp.
Eastern Safety Equip. Co., Inc.
General Scientific Equipment Co.
Glendale Optical Co., Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Welsh Mfg. Co.
Willson Products Div., Ray-O-Vac Co.

Respirators, Dust - Type A

American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Chicago Eye Shield Co.
DeVilbiss Co.
Dockson Corp.
Draeger Oxygen App. Corp.
Eastern Safety Equip. Co., Inc.
General Scientific Equipment Co.
Glendale Optical Co., Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sellstrom Manufacturing Co.
Standard Glove Co.
Watchemoket Optical Co.
Welsh Mfg. Co.
Willson Products Div., Ray-O-Vac Co.

Respirators, Dust - Type A and Lead Combination

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Chicago Eye Shield Co.
DeVilbiss Co.
Dockson Corp.
Draeger Oxygen App. Corp.
Eastern Safety Equip. Co., Inc.
General Scientific Equipment Co.
Glendale Optical Co., Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.
Welsh Mfg. Co.
Willson Products Div., Ray-O-Vac Co.

Respirators, Fume

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Chicago Eye Shield Co.
DeVilbiss Co.
Draeger Oxygen App. Corp.
Eastern Safety Equip. Co., Inc.
General Scientific Equipment Co.
Glendale Optical Co., Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Sellstrom Manufacturing Co.
Standard Glove Co.
Willson Products Div., Ray-O-Vac Co.

Respirators, Gas

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Draeger Oxygen App. Corp.
Chicago Eye Shield Co.
Eastern Safety Equip. Co., Inc.
Glendale Optical Co., Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.
Willson Products Div., Ray-O-Vac Co.

Respirators, Mists

American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Chicago Eye Shield Co.
DeVilbiss Co.
Dockson Corp.
Draeger Oxygen App. Corp.
Eastern Safety Equip. Co., Inc.
General Scientific Equipment Co.
Glendale Optical Co., Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Sellstrom Manufacturing Co.
Standard Glove Co.
Welsh Mfg. Co.
Willson Products Div., Ray-O-Vac Co.

Respirators, Radioactive Dust Fumes

American Optical Co., Safety Products Div.
Draeger Oxygen App. Corp.
Genter, C. D., Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Standard Glove Co.
Tracerlab Inc.
Willson Products Div., Ray-O-Vac Co.

Resuscitation Trainer

Globe Industries, Inc., Special Products Division

Resuscitators

Air Reduction Sales Co.
Air-Shields, Inc.
Bridgeport Industrial Products, Inc.
Buckeye Fire Dept. Equip.
Corbin-Farnsworth, Inc.
Davis Emergency Equip. Co., Inc.
Draeger Oxygen App. Corp.
E & J - See Ohio Chemical Co.
Emerson Co., J. H.
Fyr-Fyter Co., The
General Scientific Equipment Co.
Globe Industries, Inc., Special Products Division
Halperin, A. E., Co., Inc.
Halprin Supply Co.
Karel First Aid Supply Co.
Metrox, Inc.
National Cylinder Gas Corp.
Oxygen Equipment & Service Co.
Oxy-Life Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Stephenson Corp.

Resuscitator, Bag to Mouth

Air-Shields, Inc.
Buckeye Fire Dept. Equip.
E & J - See Ohio Chemical Co.
Emerson Co., J. H.
Karel First Aid Supply Co.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Resuscitators, Mouth to Mouth

Buckeye Fire Dept. Equip.
Davis Emergency Equip. Co., Inc.
Draeger Oxygen App. Corp.
Emerson Co., J. H.
Fyr-Fyter Co., The
Globe Industries, Inc., Special Products Division
Karel First Aid Supply Co.
Medical Supply Co.

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See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Mine Safety Appliances Co.
National Mine Service Co.
Oxygen Equipment & Service Co.
Pac-Kit Safety Equipment Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Willson Products Div., Ray-O-Vac Co.

Rope, Barrier (Plastic)

Jay, D., Products Co., Inc.
Miller Equip. Co., Inc.
Pendergast, Albert W., Safety Equipment Co.
Safety First Supply Company

Rope Grab, Life Line

Jay, D., Products Co., Inc.
Macwhyte Wire Rope Company
Merryatt-Lane and Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Rope, Safety Marking

Brenton Equip. Co.
Jay, D., Products Co., Inc.
Pendergast, Albert W., Safety Equipment Co.
Safety First Supply Company

Rope, Wire

American Chain & Cable Co., Inc.
Bethlehem Steel Co.
Broderick & Bascom Rope Co.
Colorado Fuel & Iron Corp., John A. Roebling's Sons Division
Jones & Laughlin Steel Corp.
Leschen Wire Rope Division, H. K. Porter Co., Inc.
Macwhyte Wire Rope Company
National Mine Service Co.
Union Wire Rope, Armco Steel Corp.
United States Steel Corp.
Upson Walton Co.
Wire Rope Corp. of America, Inc.

Rope, Wire, Plastic Coated

Aluminum Company of America
Macwhyte Wire Rope Company
Union Wire Rope, Armco Steel Corp.

Rope, Wire, Stainless Steel

American Chain & Cable Co., Inc.
Colorado Fuel & Iron Corp., John A. Roebling's Sons Division
Broderick & Bascom Rope Co.
Leschen Wire Rope Division, H. K. Porter Co., Inc.
Macwhyte Wire Rope Company
United States Steel Corp.

Safety Device, Tower Ladder

Fyr-Fyter Co., The
Nichols Engineering Company, The
Rose Mfg. Co.
Safety Tower Ladder Co.

Safety Training

Bray Studios Inc.
Embosograf Corp. of America
Porta-Clinic Instruments, Inc.
Training Aids
Whitney, L. A., Assoc., Inc.

Salt, Ice Control

Morton Salt Co.

Salt Tablets

Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
General Scientific Equipment Co.
Halperin, A. E., Co., Inc.
Karel First Aid Supply Co.
Medical Supply Co.
Mine Safety Appliances Co.
Morton Salt Co.
National Mine Service Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.
Standard Safety Equipment Co.
United States Safety Service Co.

Sample Changer, Automatic (Radiation)

Technical Associates
Tracerlab Inc.
Kahl Scientific Instrument Corp.

Samplers, Air (Radiation)

Staplex Co., The, Air Sampler Div.

Samplers, Dust

Draeger Oxygen App. Corp.
Gelman Instrument Co.
Genter, C. D., Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Staplex Co., The, Air Sampler Div.
Tracerlab Inc.
Union Industrial Equip. Corp.
Willson Products Div., Ray-O-Vac Co.

Sandals, Non-Skid

Record Industrial Co.
Reece Wooden Sole Shoe Co.
Ripple Sole Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Snyder, W. L., & Son, Inc.
Standard Safety Equipment Co.
Tingley Rubber Corp.

Sandals, Shower

Beacon Falls Rubber Footwear
Boyer Campbell Div. White Sewing Machine Co.
General Scientific Equipment Co.
Kimball Safety Prod. Co.
New Jersey Safety Equipment Co.
Record Industrial Co.
Reece Wooden Sole Shoe Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Snyder, W. L., & Son, Inc.

Sandals, Wooden Sole

Boyer Campbell Div. White Sewing Machine Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Record Industrial Co.
Reece Wooden Sole Shoe Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Snyder, W. L., & Son, Inc.

Sand Blast Equipment

Draeger Oxygen App. Corp.
Mine Safety Appliances Co.
Pangborn Corp.
Safety First Supply Company
Wheelabrator Corp.

Scaffold Jacks

Bauer Mfg. Co., The
Beaver-Advance Corporation
Patent Scaffolding Co., Inc., The
Safety First Supply Company
Universal Mfg. Co.

Scaffolding, Rolling

Baker-Roos, Inc.
Bauer Mfg. Co., The
Beaver-Advance Corporation
Patent Scaffolding Co., Inc., The
Universal Mfg. Corp.

Scaffolding, Safety

Baker-Roos, Inc.
Beaver-Advance Corporation
Duo-Safety Ladder Corp.
Globe Co., The
Hollaender Mfg. Co., The
Patent Scaffolding Co., Inc., The
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Universal Mfg. Co.
Werner, R. D., Co., Inc.

Scalers

Radiation Counter Laboratories, Inc.
Nuclear Measurements Corp.
Technical Associates
Tracerlab Inc.

Scintillation Counter, Alpha

Atomic Accessories, Inc.
Kahl Scientific Instrument Corp.
Nuclear Measurements Corp.
Rochester Safety Equip. Co., Inc.
Technical Associates
Tracerlab Inc.

Scintillation Counter

Atomic Accessories, Inc.
Nuclear Measurements Corp.
Technical Associates
Tracerlab Inc.
Union Industrial Equip. Corp.

Scintillation Counter, Gamma

Atomic Accessories, Inc.
Kahl Scientific Instrument Corp.
Nuclear Measurements Corp.
Radiation Counter Laboratories, Inc.
Rochester Safety Equip. Co., Inc.
Technical Associates
Tracerlab Inc.

Scintillation Spectrometers, Automatic

Acme Protection Equip. Co.
Nuclear Measurements Corp.
Radiation Counter Laboratories, Inc.
Technical Associates
Tracerlab Inc.

Scrubbing Machines, Floor

American Floor Machine Co., Div. of American-Lincoln Corp.
Clarke Floor Machine Co.
Finnell System, Inc.
Franklin Research Co.
Hild Floor Machine Co., Inc.
Hillyard Chemical Co.
Holt Mfg. Co.
Huntington Laboratories, Inc.
Masury-Young Co.
Multi-Clean Products, Inc.
National Chemsearch Corp.
West Chemical Products, Inc.

Searchlights

Buckeye Fire Dept. Equip.
Carpenter Mfg. Co.
Genter, C. D., Co.
Safety First Supply Company

Self-Rescuers, Miners'

Draeger Oxygen App. Corp.
Mine Safety Appliances Co.

Service, Bio-Assay

Controls for Radiation, Inc.
Occupational Hygiene Services
Tracerlab Inc.

Service, Consultation, Radioactive

Controls for Radiation, Inc.
Kahl Scientific Instrument Corp.
St. John X-Ray Laboratory
Tracerlab Inc.

Service, Film Badge

Controls for Radiation, Inc.
Draeger Oxygen App. Corp.
Genter, C. D., Co.
St. John X-Ray Laboratory
Technical Associates
Tracerlab Inc.
X-Ray Monitoring Corp.

Shoot Lifters, Magnetic

Boyer Campbell Div. White Sewing Machine Co.
Downs Crane & Hoist Co.
Genter, C. D., Co.
New Jersey Safety Equipment Co.
Nielsen, E. V., Inc.
Osborn Mfg. Corp.
Rochester Safety Equip. Co., Inc.

Shoot Lifters, Vacuum

Atlantic India Rubber Works, Inc.
Boyer Campbell Div. White Sewing Machine Co.
Genter, C. D., Co.
Littell, F. J., Machine Co., Vac-u-mation Division
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Shield, Lead, Adjustable

Atomic Accessories, Inc.
Kahl Scientific Instrument Corp.
Technical Associates
Tracerlab Inc.

Shield, Lead, Flow Counter

Atomic Accessories, Inc.
Nuclear Measurements Corp.
Radiation Counter Laboratories, Inc.
Technical Associates
Tracerlab Inc.

Shield, Lead, Geiger Tube Probe

Atomic Accessories, Inc.
Radiation Counter Laboratories, Inc.
Technical Associates
Tracerlab Inc.

Shield, Lead, Horizontal

Atomic Accessories, Inc.
Technical Associates
Tracerlab Inc.

Shield, Lead, Vertical

Atomic Accessories, Inc.
Kahl Scientific Instrument Corp.
Radiation Counter Laboratories, Inc.
Technical Associates
Tracerlab Inc.

Shield, Welding

Boyer Campbell Div. White Sewing Machine Co.
Dockson Corp.
Fibre Metal Products Co., The
Flash Shield Products Co.
Frommelt Industries Inc.
General Scientific Equipment Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Raco Products, Division of Robin W. Adair Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Singer Glove Manufacturing Co.

See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Wilkie Optical, Inc.
Willson Products Div., Ray-O-Vac Co.

Shirts, Anatomical

Mine Safety Appliances Co.

Shock-Proof Steering Wheels for Lift Trucks

Kosch Mfg. Co.

Shoe Preserver, Water Repellent

Bashlin, W. M., Co.
Hy-Test Safety Shoes, Div. International Shoe Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Speco, Inc.

Shoes, Conductive

Conductive Hospital Accessories Corp.
Hy-Test Safety Shoes, Div. International Shoe Co.
Lehigh Safety Shoe Co
McAn, Thom, Safety Shoe Division
Ripple Sole Corp.

Shoes, Leather, Linemen's

Bashlin, W. M., Co.
Bronson Shoe Co.
Hy-Test Safety Shoes, Div. International Shoe Co.
Knapp Bros. Shoe Mfg. Corp.
Record Industrial Co.
Safety First Shoe Co., Inc.

Shoes, Non-Sparking

Hy-Test Safety Shoes, Div. International Shoe Co.
Iron Age Safety Shoe Div., H. Childs & Co., Inc.
Lehigh Safety Shoe Co.
McAn, Thom, Safety Shoe Division
Record Industrial Co.

Shoes, Orthopedic

Hack Shoe Company
Karel First Aid Supply Co.
Record Industrial Co.
Reece Wooden Sole Shoe Co.
Ripple Sole Corp.

Shoes, Orthopedic

Hack Shoe Company
Karel First Aid Supply Co.
Reece Wooden Sole Shoe Co.

Shoes, Orthopedic, Wooden Sole

Karel First Aid Supply Co.
New Jersey Safety Equipment Co.
Record Industrial Co.
Reece Wooden Sole Shoe Co.
Safety Clothing and Equipment Co.

Shoes, Rubber, Safety Toe

Beacon Falls Rubber Footwear
Dunn Products
Goodall Rubber Co.
Goodrich, B. F. Footwear Products
Hood Rubber Products
Hy-Test Safety Shoes, Div. International Shoe Co.
Iron Age Safety Shoe Div., H. Childs & Co., Inc.
Lehigh Safety Shoe Co.
Midwest Glove Co., Inc.
Record Industrial Co.
Ripple Sole Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Snyder, M. L., & Son, Inc.
Standard Glove Co.

Shoes, Women's

Bronson Shoe Co.
Hy-Test Safety Shoes, Div. International Shoe Co.
Iron Age Safety Shoe Div., H. Childs & Co., Inc.
McAn, Thom, Safety Shoe Division
Record Industrial Co.
Reece Wooden Sole Shoe Co.
Safety First Shoe Co., Inc.

Shoes, Wooden Sole

Boyer Campbell Div. White Sewing Machine Co.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Record Industrial Co.
Reece Wooden Sole Shoe Co.
Safety Clothing and Equipment Co.
Safety First Supply Company
Snyder, M. L., & Son, Inc.

Shower Baths, Industrial

Bradley Washfountain Co.
Kaml First Aid Supply Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Speakman Co.

Showers, Emergency

Benson & Assoc.
General Scientific Equipment Co.
Haws Drinking Faucet Co.
Karel First Aid Supply Co.
Logan Emergency Showers, Inc.
Monaghan, J. J., Co., Inc.
Norland Associates
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Speakman Co.

Signals, Highway Warning

Brady, W. H., Co.
Canisteo Sign & Mfg. Co., Inc.
Federal Sign and Signal Corp.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Stephen-William Co.
Tedcar Products Co.

Signs, Accident Prevention

Anodyne Inc., A Div. of North Shore Nameplate
Brady, W. H., Co.
Davenport, A. C. & Son, Inc.
Embosograf Corp. of America
M-M-A, Inc.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Porcelain Enamel Finishers
Prairie State Products Co.
Ready Made Sign Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.
Standard Signs, Inc.
Stephen-William Co.
Stonehouse Signs, Inc.
Tedcar Products Co.
Vari-Products Co.
Wagner Sign Service, Inc.
Watchemoket Optical Co.
Western Lithograph Co., Westline Products Division
Whitney, L. A., Assoc., Inc.
Wilkie Optical, Inc.

Signs, Reflecting

Brady, W. H., Co.
Canisteo Sign & Mfg. Co., Inc.
Davenport, A. C. & Son, Inc.
Embosograf Corp. of America
Mine Safety Appliances Co.
Minnesota Mining and Mfg. Co.
New Jersey Safety Equipment Co.
Prairie State Products Co.
Ready Made Sign Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Standard Signs, Inc.
Stephen-William Co.
Stonehouse Signs, Inc.
Tedcar Products Co.
Vari-Products Co.
Watchemoket Optical Co.
Western Lithograph Co., Westline Products Division
Whitney, L. A., Assoc., Inc.
Wilkie Optical, Inc.

Signs, Warning, Radioactive

Anodyne Inc, A Div. of North Shore Nameplate
Atomic Accessories, Inc.
Bridgeport Industrial Products, Inc.
Charleston Rubber Co.
Controls for Radiation, Inc.
Kahl Scientific Instrument Corp.
Leeds & Northrup Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Nuclear Measurements Corp.
Radiation Counter Laboratories, Inc.
Radionics, Inc.
Rochester Safety Equip. Co., Inc.
Standard Glove Co.
Standard Signs, Inc.
Traceriab Inc.
United States Radium Corp.
Western Lithograph Co., Westline Products Division

Sleeves, Linemen's Rubber

Aljay Mfg. Co., Inc.
American Optical Co., Safety Products Div.
Dunn Products
Charleston Rubber Co.
Eastern Safety Equip. Co., Inc.
Goodall Rubber Co.
Mine Safety Appliances Co.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Salisbury, W. H., & Co.
Standard Glove Co.
Surety Rubber Co.
Wash-Rite Co., Inc.

Sleeves, Protective

Advance Glove Mfg. Co.
Air Reduction Sales Co.
Aljay Mfg. Co., Inc.
Allied Glove Corp.
American Allsafe Co., Inc.
American Optical Co., Safety Products Div.
Associated Bag & Apron Co.
Boyer Campbell Div. White Sewing Machine Co.
Dunn Products
Charleston Rubber Co.
Eastern Safety Equip. Co., Inc.
Fabriko, Inc.
Fyrepel Products, Inc.
General Scientific Equipment Co.
Goodall Rubber Co.
Industrial Gloves Co.
Jomac Inc.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
Miller Equip. Co., Inc.
Plasco Safety Products Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Record Industrial Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Sager Glove Corp., The
Sawyer-Tower, Inc.
Singer Glove Manufacturing Co.
Snyder, M. L., & Son, Inc.
Standard Glove Co.
Surety Rubber Co.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.

Sling, Nylon Web

Atlas Safety Equip. Co., Inc.
Bashlin, W. M., Co.
Bullard, E. D., Co.
Downs Crane & Hoist Co.
Jay, D., Products Co., Inc.
Jones & Laughlin Steel Corp.
Marryatt-Lane and Co., Inc.
Miller Equip. Co., Inc.
Pennsylvania Sling Co.
Rose Mfg. Co.
Safety First Supply Company

Sling, Protectors

Miller Equip. Co., Inc.
Newco Mfg. Co., Inc.
Pennsylvania Sling Co.
Union Wire Rope, Armco Steel Corp.

Slings, Chain

American Chain & Cable Co., Inc.
Campbell Chain Co.
Columbus McKinnon Chain Div., Columbus McKinnon Corp.
Downs Crane & Hoist Co.
Jones & Laughlin Steel Corp.
McKay Co., The
Merrill Brothers
Pennsylvania Sling Co.
Taylor, S. G., Chain Co., Inc.

Sling, Wire Rope

American Chain & Cable Co., Inc.
Bethlehem Steel Co.
Broderick & Bascom Rope Co.
Colorado Fuel & Iron Corp., John A. Roebling's Sons Division
Downs Crane & Hoist Co.
Jones & Laughlin Steel Corp.
Leschen Wire Rope Division, H. K. Porter Co., Inc.
Macwhyte Wire Rope Company
Pennsylvania Sling Co.
Union Wire Rope, Armco Steel Corp.
Upson Walton Co.
Wire Rope Corp. of America, Inc.

Sling, Woven Wire

Cambridge Wire Cloth Co., The
Colorado Fuel & Iron Corp., John A. Roebling's Sons Division
Jones & Laughlin Steel Corp.
Leschen Wire Rope Division, H. K. Porter Co., Inc.
Pennsylvania Sling Co.
Union Wire Rope, Armco Steel Corp.
Wire Rope Corp. of America, Inc.

Smoke Eliminators

Super Vacuum Mfg. Co.

Smoker's Stand

Genter, C. D., Co.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Industrial Products Co.
Standard Safety Equipment Co.

Soaps or Cleaners, Hand

Dameron Enterprises, Inc.
Dolge, C. B., Co.
Flemell System, Inc.
Franklin Research Co.
Gojer, Inc.
Hillyard Chemical Co.
Huntington Laboratories, Inc.
Karel First Aid Supply Co.
Lightfoot Co., The, Inc.
Magnus Chemical Co., Inc.
Mine Safety Appliances Co.
National Chemsearch Corp.
Oakite Products, Inc.
Packwood, G. H., Mfg. Co.
Penetone Co., The
Rochester Germicide Company
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
West Chemical Products, Inc.

See *SAFETY PRODUCTS SOURCES for addresses*

Safety Products Index

Socks, Safety

Alden Mills Inc.
Record Industrial Co.

Soles, Shoe, Non-Slip

American Biltrite Rubber Co., Inc., Biltrite Heel and Sole Div.
Bearfoot Sole Co.
Cambridge Rubber Co., Vul-Cork Sole Div.
Goodyear Tire & Rubber Co., The
Quabaug Rubber Co.
Reece Wooden Sole Shoe Co.
Ripple Sole Corp.

Solvents, Cleaning and Safety

Chem Industrial Co., The
Diamond Alkali Co.
Dow Chemical Co.
Du Pont De Nemours, E. I., & Co., Inc.
Fine Organics, Inc.
Karel First Aid Supply Co.
Graymills Corp.
Hillyard Chemical Co.
Huntington Laboratories, Inc.
Magnus Chemical Co., Inc.
National Chemsearch Corp.
Oakite Products, Inc.
Packwood, G. H., Mfg. Co.
Penetone Co., The
Practical Mfg. Co.
Rochester Safety Equip. Co., Inc.
Speco, Inc.
Tect, Inc.
Turco Products, Inc.

Sound Absorbers

Allied Witan Co., Inc.
B. F. Goodrich Flooring Products
Burgess-Manning Co.
Corlett-Turner Co.
Goodall Rubber Co.
Hansson, Elof, Inc.
New Jersey Safety Equipment Co.
Osborn Mfg. Corp.
Rose Mfg. Co.
Rysdon Products Co., Noise Control Div.

Sound Analyzers

Industrial Acoustics Co., Inc.
Mine Safety Appliances Co.

Sound Control Panels

Hansson, Elof, Inc.
Industrial Acoustics Co., Inc.
Johns-Manville Corporation
Rose Mfg. Co.
Rysdon Products Co., Noise Control Div.

Sound Protectors, Ear Muff

American Optical Co., Safety Products Div.
Bausch & Lomb Inc.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Clark, David, Co., Inc.
General Scientific Equipment Co.
Gentex Corp.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Protecto Ear Plugs, Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Willson Products Div., Ray-O-Vac Co.

Spectacles, Industrial

American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Boyer Campbell Div. White Sewing Machine Co.
Bridgeport Industrial Products, Inc.
Chicago Eye Shield Co.
Dockson Corp.
Eastern Safety Equip. Co., Inc.
Fendall Co.
General Scientific Equipment Co.
Glendale Optical Co., Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Sellstrom Manufacturing Co.
Standard Glove Co.
Titmus Optical Co., Inc.
United States Safety Service Co.
Watchemoket Optical Co.
Welsh Mfg. Co.
Wilkie Optical, Inc.
Willson Products Div., Ray-O-Vac Co.

Spoons, Forks with Safety Sleeves

Oval Wood Dish Corporation

Sprinkler Systems

Fyr-Fyter Co., The
Grinnell Co., Inc.
Rockwood Sprinkler Co.

Stain Removers, Floor

Franklin Research Co.
Hild Floor Machine Co., Inc.
Hillyard Chemical Co.
Huntington Laboratories, Inc.
Magnus Chemical Co., Inc.
National Chemsearch Corp.
Oakite Products, Inc.
Packwood, G. H., Mfg. Co.
Penetone Co., The

Stair Treads, Safety

Aluminum Company of America
American Abrasive Metals Co.
American Allsafe Co., Inc.
American Biltrite Rubber Co., Boston Woven Hose & Rubber Division
American Mason Safety Tread Co.
Bridgeport Industrial Products, Inc.
Dravo Corp.
Globe Co., The
Goodall Rubber Co.
B. F. Goodrich Flooring Products
Herculite Protective Fabrics
Himco
Irving Subway Grating Co., Inc.
Marryatt-Lane and Co., Inc.
Melflex Products Co., Inc.
Minnesota Mining & Mfg. Co.
Moore, Samuel, & Co.
Norton Co
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
United States Rubber Co.
Wheeling Corrugating Co.

Stairways

Marryatt-Lane and Co., Inc.
Irving Subway Grating Co., Inc.
United States Steel Corp.
Wheeling Corrugating Co.

Standards and Signs, Accident Prevention, Portable

Canisteo Sign & Mfg. Co., Inc.
Davenport, A. C. & Son, Inc.
New Jersey Safety Equipment Co.
Park Industries, Inc.
Prairie State Products Co.
Ready Made Sign Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Standard Signs, Inc.
Stephen-William Co.
Stonehouse Signs, Inc.
Vari-Products Co.
Western Lithograph Co., Westline Products Division

Static Ground Device, Personnel

Legge, Walter G., Co., Inc.

Static Neutralizer

Sticht, Herman H., Co., Inc.
United States Radium Corp.

Static Neutralizer-Humidifier

Armstrong Machine Works

Steel Toes, Safety Shoes

Beacon Falls Rubber Footwear
Bronson Shoe Co.
Goodall Rubber Co.
Haus of Krause
Hy-Test Safety Shoes, Div. International Shoe Co.
Iron Age Safety Shoe Div., H. Childs & Co., Inc.
Knapp Bros. Shoe Mfg. Corp.
McAn, Thom, Safety Shoe Division
Record Industrial Co.
Reece Wooden Sole Shoe Co.
Ripple Sole Corp.
Rochester Safety Equip. Co., Inc.
Safety Box Toe Co.
Safety Clothing and Equipment Co.
Safety First Shoe Co., Inc.
Wolverine Shoe & Tanning Corp.

Stems, Safety

American Abrasive Metals Co.
American Mason Safety Tread Co.
Globe Co., The
Irving Subway Grating Co., Inc.
Marryatt-Lane and Co., Inc.
Melflex Products Co., Inc.
Moore, Samuel, & Co.
Nichols Engineering Company, The
Norton Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Wooster Products, Inc.

Sterilizers, Can Washers

Rochester Safety Equip. Co., Inc.
Vacuum Can Co. "Aervoid"

Sterilizing Equipment

Karel First Aid Supply Co.

Stems, Safety

Advance Glove Mfg. Co.
Atlas Safety Equip. Co., Inc.
Buhrke, R. H., Co.
Klein, Mathias, & Sons, Inc.
Miller Equip. Co., Inc.
Mine Safety Appliances Co.
Rochester Safety Equip. Co., Inc.
Rose Mfg. Co.
Safety First Supply Company

Stretchers

Boyer Campbell Div. White Sewing Machine Co.
Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
Dunn Products
Ferno Mfg. Co.
Frank Mfg. Co., Inc.
General Scientific Equipment Co.
Halperin, A. E., Co., Inc.
Halprin Supply Co.
Junkin Safety Appliance Co., Inc.
Karel First Aid Supply Co.
Medical Supply Co.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Reeves Sales Co. Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sarole, Inc.
Washington Products Co.

Stretcher Kits and Cases

Bridgeport Industrial Products, Inc.
Bullard, E. D., Co.
Davis Emergency Equip. Co., Inc.
Dunn Products
Halperin, A. E., Co., Inc.
Halprin Supply Co.
Junkin Safety Appliance Co., Inc.
Karel First Aid Supply Co.
Medical Supply Co.
Mine Safety Appliances Co.
National Mine Service Co.
New Jersey Safety Equipment Co.
Osborn Mfg. Corp.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sarole, Inc.

Suits, Disposable, Radiation

Associated Bag & Apron Co.
Controls for Radiation, Inc.
Mine Safety Appliances Co.
New Jersey Safety Equipment Co.
Safety First Supply Company
Tracerlab Inc.

Sun Glasses

American Optical Co., Safety Products Div.
Dockson Corp.
Glendale Optical Co., Inc.
Pulmosan Safety Equip. Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Titmus Optical Co., Inc.
Watchemoket Optical Co.
Welsh Mfg. Co.
Willson Products Division
Wilkie Optical, Inc.

Sweat Bands

American Allsafe Co., Inc.
American Industrial Safety Equip. Co.
American Optical Co., Safety Products Div.
Associated Bag & Apron Co.
Boyer Campbell Div. White Sewing Machine Co.
Bullard, E. D., Co.
Dockson Corp.
Dunn Products
Eastern Safety Equip. Co., Inc.
Fibre Metal Products Co., The
General Bandages, Inc.
General Scientific Equipment Co.
Glendale Optical Co., Inc.
Industrial Gloves Co.
Karel First Aid Supply Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Mine Safety Appliances Co.
National Mine Service Co.
Plasco Safety Products Co.
Pulmosan Safety Equip. Corp.
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sellstrom Manufacturing Co.
Standard Glove Co.
Standard Safety Equipment Co.
Wilkie Optical, Inc.

Sweepers, Road and Parking Lots

Clarke Floor Machine Co.
Finnell System, Inc.
Handling Devices Co., Inc.
M-B Corporation
Tennant, G. H., Co.

Swing Stages

Babcock, W. W., Co., Inc.
Cleveland Ladder Co., Inc.
Patent Scaffolding Co., Inc., The
Safety First Supply Company
Werner, R. D., Co., Inc.

See SAFETY PRODUCTS SOURCES for addresses

Safety Products Index

Syphons, Acid

New Jersey Safety Equipment Co.

Tables, Luncheon

Chicago Hardware Foundry Co.

Tags, Accident Prevention

Brady, W. H., Co.
Minute Co., The
Ready Made Sign Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Glove Co.
Standard Signs, Inc.
Stonehouse Signs, Inc.

Tarpaulins, Plastic

Advance Glove Mfg. Co.
Aljay Mfg. Co., Inc.
Associated Bag & Apron Co.
Cordo Chemical Corp.
Frommelt Industries Inc.
Herculite Protective Fabrics
Industrial Gloves Co.
New Jersey Safety Equipment Co.
Plasco Safety Products Co.
Plastimayd Corporation
Racine Glove Co., Inc.
Rochester Safety Equip. Co., Inc.

Television, Industrial In-Plant

Blonder-Tongue Laboratories, Inc.
Diamond Electronics
General Precision, Inc., GPL Division
Kin Tel, Division of Cohu Electronics, Inc.

Tension Stringing Equipment, Wire

Truck Equip. Co.

Tents, Plastic

Plastimayd Corporation

Thickness Measurement Systems

Radiation Counter Laboratories, Inc.
Radionics, Inc.
Tracerlab Inc.

Tire Chain and Accessories

American Chain & Cable Co., Inc.
Columbus McKinnon Chain Div., Columbus McKinnon Corp.
McKay Co., The

Toe Guards

Acro Metal Stamping Co.
Dunn Products
Ellwood Safety Appliance Co.
Industrial Gloves Co.
Mine Safety Appliances Co.
Pendergast, Albert W., Safety Equipment Co.
Reece Wooden Sole Shoe Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Standard Glove Co.
Standard Safety Equipment Co.

Tool Holsters (Tool Holder)

Bashlin, W. H., Co.
Boyer Campbell Div. White Sewing Machine Co.
Genter, C. D., Co.
Miller Equip. Co., Inc.
Rochester Safety Equip. Co., Inc.
Rixie Mfg. Co.
Safety First Supply Company

Tool Linemen's

Bashlin, W. H., Co.
Miller Equip. Co., Inc.
Proto Tool Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Tools, Marking

Cunningham, M. E., Company
Safety First Supply Company
Thor Power Tool Co.

Tools, Non-ferrous Metal

Ampco Metal, Inc.
Boyer Campbell Div. White Sewing Machine Co.
Custanite Corp.
New Jersey Safety Equipment Co.
Nupla Mfg. Co., Div. of New Plastic Corp.
Osborn Mfg. Corp.

Tools, Safety

Ampco Metal, Inc.
Atlas Safety Equip. Co., Inc.
Beryllium Corp., The
Boyer Campbell Div. White Sewing Machine Co.
Cunningham, M. E., Company
Custanite Corp.
Magline, Inc.
Morse Manufacturing Co., Inc.
New Jersey Safety Equipment Co.
Nupla Mfg. Co., Div. of New Plastic Corp.
Osborn Mfg. Corp.
Proto Tool Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Searjeant Metal Products, Inc.
Tool & Manufacturing Co., Inc., The

Tools, Spark Resistant

Ampco Metal, Inc.

Torches, Welding

Air Reduction Sales Co.
Dockson Corp.
Drager Oxygen App. Corp.
Genter, C. D., Co.
Linde Co., Div. of Union Carbide Corp.

Tourniquets, Pneumatic

Karel First Aid Supply Co.
Mine Safety Appliances Co.
Safety First Supply Company

Towels, Paper

Rochester Safety Equip. Co., Inc.
Safety First Supply Company
West Chemical Products, Inc.

Towers, Fire Aerial

American LaFrance
Bethlehem Steel Co.
Halprin Supply Co.
Truck Equip. Co.

Training Program, Fire Prevention

Ansul Chemical Co.
Bean, John, Div., Industrial Sales Dept., Food Mach. & Chem. Corp.
Fyr-Fyter Co., The
Porto-Clinic Instruments, Inc.

Treads, Floor

Aluminum Company of America
American Abrasive Metals Co.
American Allsafe Co., Inc.
American Mason Safety Tread Co.
Dravo Corp.
Globe Co., The
Irving Subway Grating Co., Inc.
Mattfiex Products Co., Inc.
Moore, Samuel, & Co.
Norton Co.
Pres-On Products Co.

Trestles, Extension

Babcock, W. W., Co., Inc.
Cleveland Ladder Co., Inc.
Patent Scaffolding Co., Inc., The
Putnam Rolling Ladder Co., Inc.
Safety First Supply Company
Werner, R. D., Co., Inc.

Trolley Conveyors

Link-Belt Co.
Louden Machinery Co., The

Trophies

Emblem & Badge Mfg. Co.
Hornik, Frederick
Metal Arts Co., Inc.
Williams Jewelry & Mfg. Co.

Trucks, Aerial

Truck Equip. Co
Baker Industrial Trucks—A Division of Otis Elevator Co.
Clark Equip. Co., Industrial Truck Div.
Yale & Towne Mfg. Co., The

Trucks, Portable Hand

Aluminum Ladder Co.
Fairbanks Co., The
Fisher Scientific Co.
Hamilton Caster & Mfg. Co., The
Magline, Inc.
Mefco Sales & Service, Inc.
Nutting Truck and Caster Co.
Tilder Mfg. Co., Inc.

Trucks, Safety Steps

Bullard, E. D., Co.
Nutting Truck and Caster Co.

Turbines, Steam

Coppus Engineering Corp.

Underfloor Conveyors

Link-Belt Co.

Uniforms, Industrial

Institute of Industrial Launderers
Milburn Co.
Mine Safety Appliances Co.
Safety First Supply Company
Scovill Mfg. Co.
Wheeler Protective Apparel, Inc.
Woolrich Woolen Mills

Vacuum Cleaners, Industrial

American Floor Machine Co., Div. of American-Lincoln Corp.
Clarke Floor Machine Co.
Doyle Vacuum Cleaner Co.
Finnell System, Inc.
Handling Devices Co., Inc.
Hild Floor Machine Co., Inc.
Hillyard Chemical Co.
Holt Mfg. Co.
Huntington Laboratories, Inc.
Invincible Vacuum Cleaner Mfg. Co.
M-M-A, Inc.
Masury-Young Co.
Multi-Clean Products, Inc.
National Chemsearch Corp.
West Chemical Products, Inc.

Valve, Oxygen Flow

Air Reduction Sales Co.
Karel First Aid Supply Co.
Linde Co., Div. of Union Carbide Corp.
Mebrox, Inc.
Mine Safety Appliances Co.
Oxygen Equipment & Service Co.
Safety First Supply Company

Valves, Drum

Morse Manufacturing Co., Inc.
New Jersey Safety Equipment Co.
Universal Valve Co.
West Chemical Products, Inc.

Valves, Gate

American Chain & Cable Co., Inc.
Rochester Safety Equip. Co., Inc.

Valves, Oxygen

Drager Oxygen App. Corp.
Linde Co., Div. of Union Carbide Corp.
Safety First Supply Company

Valves, Safety

Coppus Engineering Corp.
Minneapolis-Honeywell Regulator Co.
New Jersey Safety Equipment Co.
Safeguard Brake Valve Co.
Tokheim Corp.

Valves, Steam

American Chain & Cable Co., Inc.
Safety First Supply Company

Valve Wheel Wrench Spark Proof

Vending Machines, Sanitary Napkins

Karel First Aid Supply Co.
Rochester Germicide Company
West Chemical Products, Inc.

Ventilating Devices, Portable

Buffalo Forge Co.
Coppus Engineering Corp.
DeBothezat Fans Div., American Machine and Metals, Inc.
Mine Safety Appliances Co.
Morrison-Pelsue Co.
Robbins & Myers, Inc.
Ruemelin Manufacturing Co.
Super Vacuum Mfg. Co.

Ventilating Equipment

American Brattice Cloth Corp.

Buffalo Forge Co.
Burt Manufacturing Co., The
Coppus Engineering Corp.
DeBothezat Fans Div., American Machine and Metals, Inc.
Mine Safety Appliances Co.
Morrison-Pelsue Co.
Muckle Manufacturing Co.
Robbins & Myers, Inc.
Super Vacuum Mfg. Co.
Wasco Products, Inc.

Vents, Fire, Fusible Link

American LaFrance
Burt Manufacturing Co., The
DeBothezat Fans Div., American Machine and Metals, Inc.
Rochester Safety Equip. Co., Inc.

Vests, Protective

Aljay Mfg. Co.
American Optical Co., Safety Products Div.
Cordo Chemical Corp.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Midwest Glove Co., Inc.
New Jersey Safety Equipment Co.
Pendergast, Albert W., Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The

Vice Jaws

Johnson Ladder Shoe Co. Inc.

See *SAFETY PRODUCTS SOURCES for addresses*

Safety Products Index

Vision Testing Equipment

American Optical Co., Safety Products Division
Bausch & Lomb Inc.
Karel First Aid Supply Co.
Keystone View Co.
Mine Safety Appliances Co.
Safety First Supply Company
Titmus Optical Co., Inc.
United States Safety Service Co.

Visual Aids

Bray Studios Inc.
Controls for Radiation, Inc.
Elliott Service Co., Inc.
Embosograf Corp. of America
Porto-Clinic Instruments, Inc.
Pyramid Film Producers
Stephen-William Co.
Training Aids
Whitney, L. A., Assoc., Inc.

Wall Grips

Rochester Safety Equip. Co., Inc.
Rose Mfg. Co.
Safety First Supply Company

Washers, Safety Grinding Wheel

Boyer Campbell Div. White Sewing Machine Co.
Genter, C. D., Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Standard Safety Equipment Co.

Washroom Equipment, Industrial

Bradley Washfountain Co.
Carey, Philip, Mfg. Co.
Gojer, Inc.
Rochester Germicide Company
Speakman Co.

Washstations, Waterless

Dameron Enterprises, Inc.
Gojer, Inc.
Packwood, G. H., Mfg. Co.
Protectoseal Co., The
Rochester Safety Equip. Co., Inc.

Watchman's Daily Report Forms

Minute Co., The

Watchman's Clock Systems

American District Telegraph Co.
Detex Watchclock Corp.

Water Carriers

Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Water Coolers

Haws Drinking Faucet Co.
Karel First Aid Supply Co.
Rochester Safety Equip. Co., Inc.
Taylor, Halsey W., Co.
United States Envelope Co.

Wax Applicators, Floor

Finnell System, Inc.
Hild Floor Machine Co., Inc.
Hillyard Chemical Co.
Huntington Laboratories, Inc.
National Chemsearch Corp.
West Chemical Products, Inc.

Wax, Floors

American Floor Machine Co., Div. of American-Lincoln Corp.
Azrock Floor Products
Brulin & Co., Inc.
Dolge, C. B., Co.
Du Pont De Nemours, E. I., & Co., Inc.
Finnell System, Inc.
Franklin Research Co.
B. F. Goodrich Flooring Products
Hild Floor Machine Co., Inc.
Hillyard Chemical Co.
Huntington Laboratories, Inc.
Johns-Manville Corporation
Johnson's Wax
Legge, Walter G., Co., Inc.
Masury-Young Co.
Multi-Clean Products, Inc.
National Chemsearch Corp.
Penetone Co., The
Rochester Germicide Company
Simoniz Co.
Tennant, G. H., Co.
West Chemical Products, Inc.

Weed Killers

Dow Chemical Co.
Du Pont De Nemours, E. I., & Co., Inc.
Geigy Agricultural Chemicals, Div. of Geigy Chemical Corp.
General Chemical Division, Allied Chemical Corp.
Huntington Laboratories, Inc.
United States Borax & Chemical Corp.
United States Rubber Co.
West Chemical Products, Inc.

Welders' Protective Equipment

Adair, Robin W., Co., Inc.
Advance Glove Mfg. Co.
Air Reduction Sales Co.
Aljay Mfg. Co., Inc.
Allied Glove Corp.
American Optical Co., Safety Products Div.
Auto View Welding Helmet Co.
Boyer Campbell Div. White Sewing Machine Co.
Dockson Corp.
General Scientific Equipment Co.
Industrial Gloves Co.
Kennedy-Ingalls Inc.
Kimball Safety Prod. Co.
Linde Co., Div. of Union Carbide Corp.
Midwest Glove Co., Inc.
Mine Safety Appliances Co.
National Mine Service Co.
Racine Glove Co., Inc.
Paco Products, Division of Robin W. Adair Co., Inc.
Rochester Safety Equip. Co., Inc.
Safety Clothing and Equipment Co.
Safety First Supply Company
Sager Glove Corp., The
Standard Glove Co.
Wash-Rite Co., Inc.
Wheeler Protective Apparel, Inc.
Wilson Products Div., Ray-O-Vac Co.

Wetting Agent for Fire Fighting

Akron Brass Mfg. Co., Inc.
American LaFrance
Fyr-Fyter Co., The
National Foam System, Inc.
Penetone Co., The
Rochester Fire Equip. Co.
Rockwood Sprinkler Co.
Safety First Supply Company

Wheel Blocks, Truck

Aldon Company, The
Bridgeport Industrial Products, Inc.
Calumet Steel Castings
General Scientific Equipment Co.
Magline, Inc.
New Jersey Safety Equipment Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

Wipers, Lint-Free

Kahl Scientific Instrument Corp.
Pendergast, Albert W., Safety Equipment Co.
Standard Glove Co.

Wiping Towels, Industrial

Associated Bag & Apron Co.
Institute of Industrial Launderers
Kimberly-Clark Corp.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company
Silicone Paper Co. of America Inc., The
West Chemical Products, Inc.

Wire Rope Fittings

American Chain & Cable Co., Inc.
Bethlehem Steel Co.
Broderick & Bascom Rope Co.
Crosby-Laughlin Division, American Hoist & Derrick Co.
Jones & Laughlin Steel Corp.
Macwhyte Wire Rope Company
Miller Equip. Co., Inc.
National Mine Service Co.
Newco Mfg. Co., Inc.
Pennsylvania Sling Co.
Union Wire Rope, Armco Steel Corp.
United States Steel Corp.
Upson Walton Co.

Workstands, Elevating, Portable & Stationary

Ballymore Company
Hamilton Tool Company, The

Wrenches, Hopper Car

Boyer Campbell Div. White Sewing Machine Co.
Safety First Supply Company

Wrenches, Spanner

Allen, W. D., Manufacturing Co.
Boyer Campbell Div. White Sewing Machine Co.
Rochester Safety Equip. Co., Inc.
Safety First Supply Company

See SAFETY PRODUCTS SOURCES for addresses

SAFETY PRODUCTS SOURCES

ACME PROTECTION EQUIP. CO.
1209 Kalamazoo St., South Haven, Mich.
**See ad page 128.

Distributors & Jobbors:

Akron 20, Ohio—Acme Safety Products Co., 387 Storer Ave.
Baton Rouge, La.—Guardian Safety Equip. Co., 3615 Capitol Hts. Ave.
Billings, Mont.—Big Horn Supply Co. Inc., P. O. Box 2036
Birmingham 12, Ala.—Safety Supplies & Services, P. O. Box 2984
Boston 10, Mass.—General Equip. Corp., 261 Franklin St.
Buffalo 23, N. Y.—The Watson Co., 1362 Kenmore Ave.
Chicago 39, Ill.—Universal Safety Equip. Co., 5115 W. Diversey Ave.
Cincinnati 37, Ohio—Williams & Co., Inc., 7640 Reinhold Dr.
Cleveland 14, Ohio—Williams & Co., Inc., 3700 Perkins Ave.
Columbus 8, Ohio—Williams & Co., Inc., 900 Williams Ave.
Dallas 35, Tex.—Guardian Safety Equip. Co., 6626 Maple Ave.
Denver 7, Colo.—Goodall Rubber Co., 4861 E. 38th Ave.
Detroit 34, Mich.—Averill Equip. Co., 19225 Conant Ave.
E. Orange, N. J.—New Jersey Safety Equip. Co., 299 Park Ave.
Grand Rapids 4, Mich.—Aden Supply Co., 1767 Whitmore Ave., N. W.
Honolulu, T. H., Hawaii—Gaspro Ltd., P. O. Box 2454
Houston 19, Tex.—Guardian Safety Equip. Co., P. O. Box 13384
Indianapolis 1, Ind.—The Safety Corp., 3722 E. Michigan St.
Kansas City 8, Mo.—Safety Inc., 17 E. 31st St.
Knoxville, Tenn.—Safety Equip. Dist. Co., 832 W. Main Ave.
Little Rock, Ark.—Fire Appliance & Safety Co., 1114 W. Markham St.
Los Angeles 3, Calif.—Guardian Safety Equip. Co., 7229 S. Main St.
Louisville, Ky.—Williams & Co. Ltd., 1109 S. Preston
Milwaukee, Wis.—Universal Safety Equip. Co., 5237 Electric Ave.
Omaha, Nebr.—Continental Safety Equip. Inc., 8715 Shamrock Rd.
Orange, N. J.—IPCO Safety Products Co., 400 S. Jefferson St.
Peoria, Ill.—Standard Industrial Prod. Co., 3527 W. Farmington Rd.
Philadelphia 4, Pa.—Guardian Safety Equip. Co., 214-216 S. 45th St.
Philadelphia 33, Pa.—Industrial Prod. Co., 2820 N. 4th St.
Pittsburgh 33, Pa.—Williams & Co. Inc., 901 Pennsylvania Ave.
Portland 14, Ore.—Sanderson Safety Supply Co., 935 S. E. Hawthorne
St. Louis 3, Mo.—Safety Inc., 3230 Olive St.
St. Paul 4, Minn.—Continental Safety Equip. Inc., 1351 Selby Ave.
Salt Lake City 10, Utah—Universal Safety & Fire Equip. Co., P. O. Box 1587
San Francisco 7, Calif.—Brenton Equip. Co., 374 Brannan St.
Seattle 1, Wash.—Safety & Supply Co., 119 Blanchard St.
Spokane 2, Wash.—Safety & Supply Co., N. 219 Division St.
Tampa, Fla.—Safety Equip. Co. of Florida, 109 Hamiller St.
Toledo 2, Ohio—Acme Safety Products Co., 1823 Vermont Ave.
Toledo 12, Ohio—Williams & Co., Inc., 946 Kane St.
Tulsa 14, Okla.—Guardian Safety Equip. Co., 1742 S. Main St.

Mexico 7, D. F., Mexico—Equipos de Seguridad, S. A., Medellin 184, Desp. 301
Montreal, Que., Canada—Butler Optical Co. Ltd., 2160 Mountain St.
W. Toronto, Ont., Canada—Bell Electricord & Safety Co., 341 Bering
Vancouver, B. C., Canada—Fleck Bros. Ltd., 110 Alexander St.

ACRO METAL STAMPING CO.
330 E. Reservoir Ave., Milwaukee, Wis.
**See ad page 220.

ADAIR, ROBIN W., COMPANY, INC.
Avaca, N. Y.
**See ad page 180.

ADVANCE GLOVE MFG. CO.
901 W. LaFayette Blvd., Detroit 26, Mich.
**See ad page 187.

AIR REDUCTION SALES COMPANY
150 East 42nd Street, New York 17, New York

Branch Offices:

Arlington, Texas—401 Watson School Road
Baton Rouge 5, Louisiana—4329 Choctaw Road
Bettendorf, Iowa—2561 State Street
Birmingham, Ala.—124 S. 16th St., P. O. Box 2583
Boston 25, Mass.—122 Mt. Vernon St., Upham's Corner
Buffalo 17, New York—1276 Military Road
Charlotte 1, N. C.—2300 S. Boulevard, P. O. Box 1147
Chicago 23, Ill.—3100 S. Homan Avenue
Cleveland 2, Ohio—1210 West 69th Street
Dayton, Ohio—Sellers Rd. at Springboro Pike, P. O. Box 923
Detroit 11, Michigan—7991 Harbwick Street
El Paso, Texas—Old Fort Bliss Road, P. O. Box 64
Emeryville 8, Calif.—1485 Park Ave., P. O. Box 8337
Houston 26, Texas—3603 Cherry St., P. O. Box 21067
Jersey City 4, N. J.—181 Pacific Avenue
Kansas City 8, Mo.—2703 Warwick Trafficway
Los Angeles, Calif.—2861 Leonis Blvd., P. O. Box 58275
Louisville 1, Kentucky—550 South 5th Street
Milwaukee 5, Wis.—818 West Winnebago St.
Minneapolis 14, Minn.—2429 University Ave.
Philadelphia 40, Pa.—Allegheny Ave. & 17th Street
Pittsburgh 33, Pa.—1116 Ridge Ave., P. O. Box 2100
Portland 9, Oregon—1325 N. W. Kearney Street
St. Louis 2, Mo.—630 South Second Street
Seattle 4, Washington—3623 East Marginal Way
Tampa, Fla.—Building #16 Naval Reserve Sta., Ft. of Grant Street

AIR-SHIELDS, INC.
Jacksonville Rd., Harboro, Pa.

AKRON BRASS MFG. CO., INC.
Spruce St., Wooster, Ohio

Branch Offices:

Aylmer, Ontario—Akron Mfg. (Canada) Ltd.
Dunn, N. C.—Box 526

ALAN WOOD STEEL CO.
Conshohocken, Pa.
**See ad page 37.

Representatives:

Atlanta 6, Ga.—1018 Monroe Dr., N. E.
Bala Cynwyd, Pa.—1 Bala Ave.
Chestnut Hill 67, Mass.—424 Boylston St.
Cincinnati 27, Ohio—103 Mariemont Center Bldg.
Cleveland 3, Ohio—7016 Euclid Ave.
Detroit 2, Mich.—427 New Center Bldg.
Houston 25, Texas—1203 Prudential Bldg.
Ligonier, Pa.—P. O. Box 286
Los Angeles, Calif.—117 W. 9th St.
New York 1[illegible], N. Y.—40 E. 42nd St.
Richmond, Va.—607-608 Richmond Federal Bldg.
St. Paul 14, Minn.—2147 University Ave.
San Francisco 4, Calif.—544 Market St.
Seattle 9, Wash.—418 Eighth Ave., N.
Washington 6, D. C.—17th & Pennsylvania Ave.

Montreal Que., Canada—A. C. Leslie & Co., Ltd. P. O. Box 1160
Toronto, Ont., Canada—A. C. Leslie & Co., Ltd., 130 Commissioners St.
Vancouver, B. C., Canada—A. C. Leslie & Co., Ltd., 8325 Main St.

Distributors:

Baltimore, Md.—A. M. Castle & Co., 801 N. Kresson St.
Berkeley, Calif.—A. M. Castle & Co., 717 Potter St.
Buffalo, N. Y.—Ernst Iron Works, Inc., 75 Lathrop St.
Cambridge, Mass.—Brown-Wales Co., 165 Ridge Ave., Ext.
Cleveland, O.—Republic Structural Iron, 1290 E. 53rd St.
Dallas, Tex.—Schill Steel Co. of Dallas, 3835 Singleton
Detroit, Mich.—Kasle Steel Corp., 4943 Wyoming Ave.
Duluth, Minn.—Zelk-Josephs Co., 382 Garfield Ave.
Franklin Pk., Ill.—A. M. Castle & Co., 3400 N. Wolf Rd.
Honolulu, Hawaii—Lacy Mfg. Co., 110 Puuhale Rd.
Houston, Tex.—Schill Steel Prod. Inc., 3001 W. 11th St.
Los Angeles, Calif.—A. M. Castle & Co., 2200 E. 95th St.
McKees Rocks, Pa.—Follansbee Metals Div., 200 Bradley St.
Milwaukee, Wis.—A. M. Castle & Co., 930 S. 17th St.
New Brunswick, N. J.—Morrison Steel Co., Jersey Ave.
New York, N. Y.—Victor Steel Prod. Corp., Leggat Ave. At Truxton St.
North Kansas City, Mo.—A. M. Castle & Co., 1 W. 10th St.
Odessa, Tex.—Schill Steel Prod., Inc., P. O. Box 3653
Philadelphia, Pa.—Morris, Wheeler & Co., Inc., Fox St. & Roberts
Philadelphia, Pa.—Horace T. Potts Co., Erie Ave. & 'D' St.
Rockford, Ill.—A. M. Castle & Co., 2500 N. Main St.
San Francisco, Calif.—A. M. Castle & Co., 800 Indiana St.
Seattle, Wash.—A. M. Castle & Co., 3660 E. Marginal Way
Toledo, Ohio—Art Iron & Wire Works, Inc., 860 Curtis St.

ALBI MFG. CO., INC.
Rockville, Conn.

ALDEN MILLS, THE
P. O. Box 1664, New Orleans 11, La.

ALDERSON RESEARCH LABORATORIES, INC.
48-14 35th St., Long Island City 1, N. Y.

ALDON COMPANY, THE
3338 Ravenswood Ave., Chicago 13, Ill.

ALEN CORP.
11 Park Place, New York 7, N. Y.

ALJAY MFG. CO., INC.
1516 Callowhill St., Philadelphia 30, Pa.

ALLEN, W. D., MANUFACTURING CO.
650 S. 25th Ave., Bellwood, Ill.

Branch Offices:

Albuquerque, N. M.—211 Sierra Drive S. E., P. O. Box 3086
Ames, Iowa—1416 Marston St.
Boston 14, Mass.—150 Causeway St.
Cincinnati 2, Ohio—1179 Gilbert Ave.
Cleveland 14, Ohio—1547 E. 18th St.
Columbus 12, Ohio—1103 Dublin Rd.
Dallas 28, Tex.—3212 Crest Ridge Drive
Dallas 35, Tex.—9000 Sovereign Row, P. O. Box 35432
Denver 1, Colo.—3755 Wazee St., P. O. Box 1225
Denver 23, Colo.—451 S. Jason St.
Detroit 2, Mich.—14 Smith St.
Elkhart, Ind.—1727 W. Lusher Ave., P. O. Box 622
El Paso, Tex.—2137 Mills Ave.
Honolulu 4, Hawaii, U. S. A.—239 Merchant St., P. O. Box 2516
Houston 1, Tex.—4 N. Chenevert St., P. O. Box 1644
Indianapolis, Ind.—3719 Schofield Ave., P. O. Box 50307
Ithaca, N. Y.—103 Seneca Bldg.
Jacksonville 7, Fla.—4066 Mariana Road
Kansas City 11, Mo.—637 W. 39th St.
Los Angeles 21, Calif.—1616-1618 S. Santa Fe Ave.
Louisville 20, Ky.—P. O. Box 20023
Maywood, Ill.—1918 S. 7th Ave.
Millbrae, Calif.—631 Bonita Ave.
Milwaukee, Wis.—1505 N. 27th St.
Nashville 12, Tenn.—Formosa Bldg. 4111 Hillsboro Rd.
New Orleans 12, La.—725 Hibernia Bank Bldg.
New York 7, N. Y.—66 Reade St.
Oakland 4, Calif.—321 E. 12th St., P. O. Box 987
Philadelphia 30, Pa.—712 N. 16th St.
Pittsburgh 23, Pa.—394 Butler St.
Portland 4, Ore.—109 S. W. Front Ave.
St. Louis 36, Mo.—10139 Edgefield Ave.
St. Paul 14, Minn.—2645 University Ave.
Salt Lake City 1, Utah—290 S. Fourth West
Seattle 4, Wash.—2400 Sixth Ave. S.
Seattle 99, Wash.—422 First Ave. W.
Spokane 10, Wash.—W. 34 Second Ave., P. O. Box 345
Syracuse 12, N. Y.—4 Wilbert Dr.
Wethersfield 9, Conn.—34 Peach Hill Rd.

Montreal, Quebec, Canada—Rm. 429, Medico-Dental Bldg., 1396 St. Catherine St. West
Winnepeg, Manitoba, Canada—608 Paris Bldg.

ALLIED GLOVE CORP.
325 E. Chicago St., Milwaukee 2, Wis.

ALLIED WETAN CO., INC.
12900 Bellaire Rd., Box 8725, Cleveland 35, Ohio

ALUMINUM COMPANY OF AMERICA
1501 Alcoa Building, Pittsburgh 19, Pa.

Sales Offices:

Akron 8, Ohio—506 Akron Savings & Loan Bldg.
Albany 10, N. Y.—255 Lark St.
Allentown, Pa.—1132 Hamilton St.
Atlanta 9, Ga.—Alcoa Bldg., 1615 Peachtree St.
Baltimore 2, Md.—1007 Commercial Credit Bldg.
Birmingham 13, Ala.—P. O. Box 7424A
Boise, Idaho—1220 Vista Avenue
Boston 16, Mass.—20 Providence St., Park Square
Bridgeport 1, Conn.—Atlantic Street
Buffalo (Tonawanda), N. Y.—2427 Sheridan Drive
Charlotte 2, N. C.—1000 Wachovia Bank Bldg.
Chattanooga 2, Tenn.—1205 Volunteer Bldg.
Chicago 11, Ill.—520 N. Michigan Ave.
Cincinnati 6, Ohio—Alcoa Bldg., 2331 Victory Parkway
Cleveland 13, Ohio—1450 Terminal Tower
Columbus 15, Ohio—230 Bryson Bldg.
Dallas 1, Tex.—1900 Fidelity Union Tower
Davenport, Iowa—603 Brady St.
Dayton 5, Ohio—207 Northtown Arcade
Denver 6, Colo.—105 Fillmore St.
Des Moines 12, Iowa—3620 Ingersoll Ave.
Detroit 2, Mich.—610 New Center Bldg.
Flint 2, Mich.—510 Mott Foundation Bldg.
Fort Wayne, Ind.—2924 South Calhoun Street Bldg.
Garden City, N. Y.—1001 Franklin Ave.
Grand Rapids 2, Mich.—812 Michigan National Bank Bldg.
Hartford 5, Conn.—1049 Asylum Ave.
Houston 2, Tex.—1310 First City National Bank Bldg.
Indianapolis 7, Ind.—2939 North Meridian St.
Jackson, Mich.—910 National Bank Building
Kansas City 5, Mo.—2300 Power & Light Building
Lafayette, Ind.—P. O. Box 500
Lima, Ohio—901 National Bank Building
Little Rock, Ark.—414 Pulaski St.
Los Angeles 17, Calif.—1145 Wilshire Blvd.
Louisville 2, Ky.—1152 Starks Bldg.
Lubbock, Tex.—203 Field Bldg.
Memphis 17, Tenn.—4515 Poplar Ave.
Miami (Hialeah), Fla.—440 Hialeah Drive Bldg.
Milwaukee 3, Wis.—2040 West Wisconsin Ave.
Minneapolis 24, Minn.—4010 West 65th St.
Nashville 12, Tenn.—295 Wilson-Bates Bldg.
Newark 2, N. J.—744 Broad St.
New Orleans 12, La.—1225 Whitney Bldg.
New York 17, N. Y.—230 Park Ave.
Oakland 8, Calif.—1001 46th St.
Oklahoma City 3, Okla.—111 N. W. 23rd St.
Omaha 2, Nebr.—746 Omaha National Bank Building
Peoria, Ill.—614 Commercial Bank Building
Philadelphia 9, Pa.—123 S. Broad St.
Phoenix, Ariz.—719 First National Bank Bldg.
Pittsburgh 20, Pa.—875 Greentree Rd.
Portland 4, Ore.—1115 U. S. National Bank Bldg.
Providence 3, R. I.—2503 Industrial Bank Bldg.
Richmond 20, Va.—908 North Thompson St.
Rochester 18, N. Y.—Exile Bldg.
St. Louis 8, Mo.—10th Floor, Continental Bldg.
San Diego 3, Calif.—2962 Fifth Ave.
San Francisco 4, Calif.—2909 Equitable Life Bldg.

Continued on next page

See SAFETY PRODUCTS SOURCES for addresses

Safety Products Sources

Seattle 1, Wash. –1411 Fourth Ave. Bldg.
South Bend 1, Ind. –805 J. M. S. Bldg.
Spokane 1, Wash. –610 Fidelity Bldg.
Springfield 3, Mass. –508 Tarbell-Watters Bldg.
Syracuse 3, N. Y. –731 James St.
Tampa 9, Fla. –4302 Henderson Blvd.
Toledo 2, Ohio–350 W. Woodruff Ave.
Washington 6, D. C. –1200 Ring Bldg.
White Plains, N. Y. –180 South Broadway
Wichita 2, Kan. –1010 Central Bldg.
Wilmington 1, Del. –825 Bank of Delaware Bldg.
Worcester 8, Mass. –22 Pleasant St.
York, Pa. –205 Manufacturers Bldg.
Youngstown 3, Ohio–537 Ohio Edison Bldg.

Distributors:

Albany 1, N. Y. –Eastern Metals Warehouse, Inc., P. O. Box 910
Atlanta 3, Ga. –The J. M. Tull Metal & Supply Co., Inc., P. O. Box 4628, 285 Marietta St., N. W.
Baltimore 5, Md. –Whitehead Metals, Inc., 4300 E. Monument St.
Bennington, Vt. –Edgcomb Steel of New England, Inc.
Berkeley 10, Calif. –Ducommun Metals & Supply Co., 2550 Seventh St.
Birmingham, Ala. –Winkle Supply Co., Inc., 2923 Fifth Ave., S.
Birmingham, Ala. –The J. M. Tull Metal & Supply Co., Inc., 1301-25th Avenue, North
Boise, Idaho–Pacific Metal Co., 325 Grove St.
Buffalo 7, N. Y. –Brace-Mueller-Huntley, Inc., 1807 Elmwood Ave.
Buffalo 7, N. Y. –Whitehead Metals, Inc., 2128 Elmwood Ave.
Cambridge 39, Mass. –Whitehead Metals, Inc., 201 Albany St.
Charlotte 6, N. C. –Edgcomb Steel Co., 527 Atando Ave.
Chicago 80, Ill. –Central Steel & Wire Co., P. O. Box 5310A
Chicago 50, Ill. –The Corey Steel Co., P. O. Box 5137, 2800 S. 61st Ct.
Chicago 80, Ill. –Steel Sales Corp., 3348 S. Pulaski Rd.
Cincinnati 16, Ohio–Central Steel & Wire Co., P. O. Box 148
Cincinnati 29, Ohio–Williams & Co., Inc., 3231 Fredonia Ave.
Cleveland 2, Ohio–A. M. Castle & Co., Nottingham Steel & Aluminum Division, 4510 Division Ave.
Cleveland 14, Ohio–Williams & Co., Inc., 3700 Perkins Ave.
Columbus 8, Ohio–Williams & Co., Inc., 900 Williams Ave.
Dallas 9, Tex. –Metal Goods Corp., 6211 Cedar Springs Rd.
Denver 16, Colo. –Marsh Steel & Aluminum Co., 5500 Colorado Blvd.
Denver 5, Colo. –Metals Goods Corp., 4343 Holly St.
Detroit 12, Mich. –Central Steel & Wire Co., 13400 Mount Elliott Ave.
Detroit (Hazel Park), Mich. –Meier Brass & Aluminum Co., 1471 E. Nine Mile Road
Detroit 10, Mich. –Steel Sales Co. of Michigan, 5151 Wesson Ave.
Elizabeth, N. J. –Adam Metal Supply of New Jersey, 520 York St.
Greensboro, N. C. –Edgcomb Steel Co., East Bessemer Ave. & Warehouse St.
Greenville, S. C. –J. M. Tull Metal & Supply Co., Inc., 205 Airport Rd.
Harrison, N. J. –Whitehead Metals, Inc., 1000 S. Fourth St.
Hialeah, Fla. –The J. M. Tull Metal & Supply Co., Inc., P. O. Box 218
Honolulu 14, Hawaii–Aluminum Products Hawaii, Ltd., 649 Sheridan
Houston 3, Tex. –Metal Goods Corp., 711 Milby St.
Indianapolis 18, Ind. –Steel Sales Co. of Indiana, Inc., 2185 N. Sherman Drive
Jacksonville 5, Fla. –The J. M. Tull Metal & Supply Co., Inc., P. O. Box 6295
Kenilworth, N. J. –Jones & Laughlin Steel Corp., Strip Steel Div., Kenilworth Plant, 750 Boulevard
Los Angeles 54, Calif. –Ducommun Metals & Supply Co., 4890 S. Alameda St.
Los Angeles 22, Calif. –Pacific Metals Co., Ltd., 2187 S. Garfield
Louisville 3, Ky. –Williams & Co., Inc., 1109 S. Preston St.
Memphis 6, Tenn. –Metal Goods Corporation, 1970 Latham St.
Milford Conn. –Edgcomb Steel of New England, Inc., 950 Bridgeport
Milwaukee 1, Wis. –Central Steel & Wire Co., P. O. Box 1154
Milwaukee 9, Wis. –Steel Sales Co. of Wisconsin, 2400 W. Cornell St.
Minneapolis 13, Minn. –Steel Sales Co. of Minnesota, 401 Harding St.
Nashua, N. H. –Edgcomb Steel of New England, Inc., P. O. Box 437
New Orleans 12, La. –Metal Goods Corp., 432 Julia St.
New York (Long Island City 1), N. Y. –Adam Metal Supply, Inc., 48th Avenue at East River
New York (Brooklyn), N. Y. –Straks Aluminum Co., Inc., 800-801 Snediker Ave.
New York 14, N. Y. –Whitehead Metals, Inc., 303 W. Tenth St.
North Kansas City 16, Mo. –Marsh Steel & Aluminum Co., 101 E. Ninth St.
North Kansas City 16, Mo. –Metal Goods Corp., 1300 Burlington Ave.
Philadelphia 34, Pa. –Edgcomb Steel Co., "D" St., below Erie Ave.
Philadelphia 40, Pa. –Whitehead Metals, Inc., 1955-75 Hunting Park
Phoenix, Ariz. –Ducommun Metals & Supply Co., 301 S. 24th St.
Pittsburgh 33, Pa. –Williams & Co., Inc., 901 Pennsylvania Ave.
Portland 9, Ore. –Pacific Metal Co., 303 N. W. Park Ave.
Rochester 1, N. Y. –Brace-Mueller-Huntley, Inc., 315 Hollenbeck St.
St. Louis 14, Mo. –Metal Goods Corp., 8800 Page Blvd.
St. Louis 10, Mo. –Steel Sales Co. of Missouri, Inc., 4565 McRee Ave.
Salt Lake City 1, Utah–Pacific Metals Co., Ltd., 261 W. 5th South
San Diego, Calif. –Ducommun Metals & Supply Co., 1300 Wilson St.
San Francisco 7, Calif. –Pacific Metals Co., Ltd., 1900 Third St.
Seattle, Wash. –Ducommun Metals & Supply Co., 120 W. Dawson St.
Seattle 4, Wash. –Pacific Metal Co., 4150 First Ave. South
Slatersville, R. I. –Edgcomb Steel of New England, Inc., Woonsocket Industrial Park
Syracuse 1, N. Y. –Brace-Mueller-Huntley, Inc., P. O. Box 1340, Thompson Road
Syracuse 4, N. Y. –Whitehead Metals, Inc., 207 W. Taylor St.
Tampa 10, Fla. –The J. M. Tull Metal & Supply Co., Inc., P. O. Box 11516
Toledo 12, Ohio–Williams & Co., Inc., 946 Kane St.
Tulsa 13, Okla. –Metal Goods Corp., 1623 N. 71st E. Ave.
Wichita, Kan. –Marsh Steel & Aluminum Co., 2037 Southwest Blvd.
Wichita 16, Kan. –Metal Goods Corp., 2971 S. Madison St.
Windsor, Conn. –Whitehead Metals, Inc., Hartford-Springfield Expressway
York, Pa. –Edgcomb Steel Co., 420 Memory Lane

ALUMINUM LADDER COMPANY
18 W. Darlington St. Ext., Florence, S. C.
**See ad pages 68 and 69.

AMERICAN ABRASIVE METALS CO.
460 Colt St., Irvington 11, N. J.
**See ad page 40.

Branch Offices:

San Francisco, Calif. –55 New Montgomery St.
Whittier, Calif. –123 Baldwin Place
Chicago, Ill. –228 N. LaSalle St., Rm. 1250
Buffalo, N. Y. –1580 Kenmore Ave.
Philadelphia, Pa. –1700 Walnut St.
Houston 1, Tex. –Box 1029

AMERICAN ALLSAFE CO., INC.
1245 Niagara St., Buffalo 13, N. Y.

Branch Offices:

Erie, Pa. –347 Marsh St.
Rochester, N. Y. –907 Monroe Ave.
Syracuse, N. Y. –1224 Erie Blvd., E.

AMERICAN BILTRITE COMPANY
Boston Woven Hose & Rubber Division
P. O. Box 1071, Boston 3, Massachusetts

Offices and Warehouses:

Atlanta 9, Ga. –2131 Plaster Bridge Road
Atlanta 24, Ga. –P. O. Box 13555, Station K
Broadview, Illinois–2651 Gardner Road
Dallas 7, Texas–2621 Irving Boulevard
Dallas 7, Texas–P. O. Box 10086
Denver 4, Colorado–710 West Colfax Avenue
Los Angeles, Calif. –4464 District Boulevard
Memphis 1, Tenn. –Poplar Avenue and River Front
Minneapolis 2, Minnesota–1002 Baker Bldg.
New York 7, New York–30 Church Street
Oakland 12, Calif. –103 Grand Avenue
Phoenix, Arizona–327 East Jefferson Street
Portland 9, Oregon–205 Northwest Fifth Avenue
Richmond 30, Va. –2103 North Hamilton Street
St. Louis 2, Mo. –801 North Second Street

Toronto 7, Ontario (Can. Ltd. –2149 Yonge Street

AMERICAN BILTRITE RUBBER COMPANY, INC.
Biltrite Heel and Sole Division
22 Willow Street, Chelsea 50, Massachusetts
**See ad page 157.

AMERICAN BRATTICE CLOTH CORP.
190 Argonne Road, Warsaw, Ind.

AMERICAN CAN CO.
Dixie Cup Division
24th & Dixie Ave., Easton, Pa.

Branch Offices:

Anaheim, Calif. –901 E. South St., Box 671
Chicago 12, Ill. –401-431 N. Western Ave.
Darlington, S. C. –Ave. 'A' & 2nd St.
Fort Smith, Ark. –Midland Blvd.
Lexington, Ky. –P. O. Box 1514
Ont., Canada, Brampton

Distributors:

Major wholesale paper distributors throughout the U. S.

AMERICAN CHAIN & CABLE CO., INC.
929 Connecticut Ave., Bridgeport 2, Conn.

Divisions:

Bridgeport 2, Conn. –Allison-Campbell Division, American Chain & Cable Company, Inc.
Reading, Pa. –R-P&C Valve Division, American Chain & Cable Co., Inc., Tulpehocken St.
Wilkes-Barre, Pa. –American Cable Division, American Chain & Cable Company, Inc., 271 S. Pennsylvania
York, Pa. –American Chain Div., American Chain & Cable Co., Inc., 454 E. Princess St.
York, Pa. –Wright Hoist Div., American Chain & Cable Co., Inc., 735 Hay St.

District Offices:

Atlanta, Ga. –1055 W. Marietta St. N. W.
Denver 16, Colo. –4555 E. 46th Ave.
Detroit 34, Mich. –2401 E. 7 Mile Road
Exeter, Pa. – Stevens Lane
Houston 1, Texas–630 McFarland St.
Los Angeles 22, Calif. –6800 E. Acco St.
Melrose Park, Ill. –2040 N. Hawthorne Ave.
New York 17, N. Y. –230 Park Ave.
Philadelphia 22, Pa. –2nd & Diamond Sts.
Pittsburgh 5, Pa. –2250 Noblestown Rd.
San Francisco 7, Calif. –690 Tennessee St.
South Boston 27, Mass. –69 'A' Street
Wilkes-Barre, Pa. –271 S. Pennsylvania St.
York, Pa. –454 E. Princess St.

AMERICAN DISTRICT TELEGRAPH COMPANY
155 Sixth Avenue, New York 13, New York

AMERICAN DRYER CORPORATION
1405 Locust St., Philadelphia 7, Pa.

Distributors:

Chicago, Ill. –Interstate Sanitation Co. Inc., 4245 W. Fullerton St.
Cincinnatti, O. –Interstate Sanitation Co. Inc., 433 Elm St.
Cleveland, O. –American Dryer of Cleveland, 2029 Prospect Ave.
Davenport, Ia. –Hockenberg Fixture & Supply Co., 1003 W. 4th St.
Detroit, Mich. –Interstate Sanitation Co., Inc., 1411 E. Milwaukee
Fall River, Mass. –Lavoie & Hillman, 2 E. Main St.
Garden City, Mich. –American Dryer of Michigan, 31044 Windsor
Huntington, Ind. –Huntington Laboratories
Indianapolis, Ind. –American Dryer Sales of Indiana, 19 E. South St.
Jersey City, N. J. –American Dryer Dist. of N. J., 419 Whiton St.
Los Angeles, Calif. –Balco Industries, 8833 Sunset Blvd.
Minneapolis, Minn. –Leonard Sales Co., 625 Wolfberry Lane
New York, N. Y. –Canaday Wholesalers Inc., 118 E. 27 St.
Pittsburg, Pa. –Iron City Wiping Materials Co., Reed & Heldman Sts.
St. Lake City, Utah–Lovinger Disinfectant Co., Box 1111
Seattle, Wash. –Northwest Janitor Supply, 534 First Ave. South
Tacoma, Wash. –Murtough Supply Co., 706 Pacific Ave.
Washington, D. C. –American Dryer Sales of Md., 734-15 St. N. W.
Webster Grove, Mo. –St. Louis Distributing Co., 49 N. LaClede Station Rd.

Mexico City 12, Mex. –Richmex, S. A., Av. Insurgentes 1032, Desp. 301
Montreal, Quebec, Canada–Avmor Ltd., 431 St. Helen St.

AMERICAN FLOOR MACHINE CO.
Division of American-Lincoln Corp.
518 S. St. Clair St., Toledo 9, Ohio

Branch Offices:

Atlanta 24, Ga. –2196 Cheshire Bridge Rd., N. E.
Baltimore 14, Md. –3004 Mary Ave.
Birmingham 4, Ala. –802 Third Ave., W.
Boston, Mass. –74 Lincoln St.
Buffalo 14, N. Y. –2464 Main St.
Charlotte, N. C. –1213-15 E. Fourth St.
Chicago 51, Ill. –4737 W. Chicago Ave.
Cincinnati 19, Ohio–2525 Vine St.
Cleveland 3, Ohio–5143 Superior Ave.
Columbus 6, Ohio–52 W. Whittier St.
Dallas 4, Tex. –4521 Bryan St.
Denver 2, Colo. –1748 Blake St.
Detroit 4, Mich. –8315 Grand River Ave.
Hartford 10, Conn. –1069 New Britain Ave.
Houston 7, Tex. –3122 White Oak Drive
Indianapolis 2, Ind. –8 West 22nd St.
Jacksonville 7, Fla. –1636 Hendricks Ave.
Kansas City 10, Mo. –5506 Troost Ave.
Los Angeles 22, Calif. –7148 E. Condor St.
Memphis 4, Tenn. –1142 Jefferson Ave.
Miami 42, Fla. –4053 N. W. 17th Ave.
Minneapolis 1, Minn. –1227 E. Franklin Ave.
Nashville 3, Tenn. –135-37 2nd Ave., N.
Newark 3, N. J. –697 Springfield Ave.
New Orleans, La. –3609 Airline Hwy. St.
Long Island City 1, N. Y. –31-19 37th Ave.
Philadelphia, Pa. –7300 Crescent Blvd.
Pittsburgh 24, Pa. –5341 Penn Ave.
Rochester 19, N. Y. –429 Thurston Rd.
St. Louis 10, Mo. –4341 Manchester Ave.
Salt Lake City, Utah–117 East 6th S.
San Francisco 10, Calif. –2701 Folsom St.
Seattle 4, Wash. –814 Lane St.
North Syracuse, N. Y. –602 S. Main St.
Toledo 13, Ohio–2742 Sylvania Ave.
Washington 11, D. C. –4702 14th St., N. W.

AMERICAN INDUSTRIAL SAFETY EQUIP. CO.
3500 Lakeside Ave., Cleveland 14, O.
**See ad page 126.

Distributors:

Distributors located in all principal cities.

AMERICAN LA FRANCE
Div. of Sterling Precision Corp.
100 E. LaFrance St., Elmira, N. Y.
**See ad page 233.

Branch Offices:

Atlanta 3, Ga. –181 Spring St., N. W.
Boise, Idaho–503 S. 16th St.
Burlingame, Calif. –868 Burlway Rd.
Chicago 11, Ill. –445 N. Lake Shore Dr.
Cleveland 14, Ohio–1371 E. 18th St.
Dallas 8, Tex. –2709 N. Beckley Ave.
Denver 2, Colo. –1741 Arapahoe St.
Detroit 38, Mich. –15811 Livernois Ave.
Houston 3, Tex. –11 N. Palmer St.
Kansas City 8, Mo. –2020 Broadway
Long Island City, N. Y. –36-20 38th Ave.
Los Angeles 11, Calif. –2113 S. San Pedro St.
New Orleans 13, La. –737 Felicity St.
Philadelphia 8, Pa. –401 N. Broad St.
Phoenix, Ariz. –1809 E. Indian School Rd.
Pittsburgh 19, Pa. –40 Terminal Way.
St. Louis 12, Mo. –1432 Hodiamont St.
Salt Lake City 2, Utah–257 E. 2nd South St.
Seattle 22, Wash. –516 E. Pike St.
Silver Spring, Md. –P. O. Box 310
Spokane 4, Wash. –930 W. 2nd Ave.

AMERICAN-MARIETTA CO.
Adhesive, Resin & Chemical Division
3400-13th Ave., S. W., Seattle 4, Wash.

Branch Offices:

Newark, O. –42 So. 3rd St.

Distributors:

Seattle, Wash. –Charles R. Watts Co., 6th N. W. & Leary Way

AMERICAN MASON SAFETY TREAD COMPANY
P. O. Box 310, Lowell, Massachusetts

Branch Offices:

Boston 11, Mass. –99 Chauncy Street

AMERICAN MAT CORP.
1724 Adams St., Toledo 2, Ohio

AMERICAN OPTICAL CO.
Safety Products Division.
84 Mechanic St., Southbridge, Mass.
**See ad back cover.

Branch Offices:

Atlanta, Ga. –524 Plaster Ave., N. E.
Cleveland, O. –1325 Rockwell Ave.
Denver, Colo. –644 Delaware St.

SAFETY PRODUCTS INDEX begins on page 301

Detroit, Mich. –8865 Schaefer Rd.
Franklin Park, Ill–10129 Pacific Ave.
Hollywood, Calif.–1433 Cole Place
Houston 19, Tex.–1201 W. Clay St.
Philadelphia, Pa.–66 N. Juniper St.
Richmond, Va.–221 Broad, Grace Arcade Bldg.
St. Louis, Mo.–1709 Washington Blvd.
San Francisco, Calif.–141 Industrial Ave.
Seattle, Wash.–312 Dexter Ave., N.
Southbridge, Mass.–P.O. Box 204
Toronto, Ont., Canada–120 Wellington St., W.

Distributors:

Vancouver, B.C., Canada–Fleck Bros., Ltd. 210 Alexander St.

AMPCO METAL, INC.
1734 S. 38th St., Milwaukee 1, Wis.
**See ad page 215.

Branch Offices:

Chicago, Ill.–6124 N. Milwaukee Ave.
Cincinnati, Ohio–Section & Reading Rds., Roselawn Center Bldg.
Cleveland, Ohio–25th & Lorain, United Office Bldg.
Detroit, Mich.–4612 Woodward Ave.
Englewood, N.J.–16-22 W. Palisade Ave.
Garland (Dallas), Texas–630 S. Jupiter Rd.
Hartford, Conn.–63 Wells Rd.
Huntington Park, Calif.–6131 Maywood Ave.
Indianapolis, Ind.–230 S. Pennsylvania St.
Philadelphia, Pa.–Garrett Rd. & Market St., 69th St. Theatre Bldg.
Pittsburgh, Pa.–211 Nelbon Ave.

Distributors:

Atlanta, Ga.–Ziegler Tools, Inc., 430 Luckie St., N. W.
Bala-Cynwyd, Pa.–Maddock & Company, Inc., 55 Rock Holl Road
Baltimore, Md.–Bronze Specialties, Inc., 1655 Warner St.
Baton Rouge, La.–Murray-Brooks, Inc.
Beaumont, Tex.–G-M Hardware & Supply Co., 902 Bowie St.
Beaumont, Tex.–Norvell-Wilder Supply Co., Drawer 4145
Buffalo, N.Y.–Steinwach's Safety Supply Co., 1573 S. Park Ave.
Buffalo, N.Y.–Watson Company, 1362 Kenmore Ave.
Charleston, W. Va.–Baldwin Supply Co., 207 Virginia St., W.
Charleston, W. Va.–Persingers Inc., 520 Elizabeth St.
Chicago, Ill.–The Amco Corp., 1220 Randolph St.
Chicago, Ill.–McMaster-Carr Supply Co., 640 W. Lake St.
Chicago, Ill.–Scientific Industrial Supply Co., 17 E. 23rd St.
Cincinnati, Ohio–Vulcan Supply & Metals Co., 595 Reading Rd.
Cleveland, Ohio–The Amco Corp., 3333 Broadway St.
Cleveland, O.–General Industrial Supply Co., State at Brookpark Rd.
Corpus Christi, Tex.–Southwest Equipment & Extinguisher Co., 526 Palm Drive
Dallas, Tex.–Gitler Tool Corp., 8700 Chancellor Row
Denver, Colo.–Aviation Industrial Supply Co., Stapleton Airfield
Detroit, Mich.–The Amco Corp., 5733 Grand River Ave.
Detroit, Mich.–Boyer-Campbell Co., 801 W. Baltimore Ave.
Detroit, Mich.–C.L. Gransden Co., 1214 18th St.
Hartford, Conn.–Industrial Safety Supply Co., Inc., 574 New Park Ave., W.
Hillside, N.J.–A-C Equipment Company, 309 Hillside Ave.
Honolulu, Hawaii–Pell Co., Inc., P.O. Box 1441
Houston, Tex.–Rex Supply Corp., 3715 Harrisburg Blvd.
Houston, Tex.–Tools, Inc., 4109 Fulton St.
Indianapolis, Ind.–Central Rubber & Supply Co., 30 E. Georgia St.
Jacksonville, Fla.–J. G. Christopher Co., 416-22 E. Bay St.
Jackson, Miss.–Mississippi Foundry & Machine Co., Inc., 300 West South St.
Kansas City, Mo.–Aviation Industrial Supply Co., 1305 Union Ave.
Lake Charles, La.–Murray-Brooks, Inc., 900 Mount Hope St.
Lake Charles, La.–Standard Supply & Hardware Co.
Linden, N.J.–The Amco Corp., 612 Commerce Rd.
Long Island City, N.Y.–The Amco Corp., 39-28 42nd St.
Long Island City, N.Y.–W. S. Wilson Corp., 47-90 38th.
Los Angeles 21, Calif.–A. W. Buchanan & Price, 1728 E. 7th St.
Louisville, Ky.–Graft-Pelle Co., 309 W. Main St.
Louisville, Ky.–Neill-LaVielle Supply Co., 2211 S. Brook St.
Melrose, Mass.–Davis Emergency Equipment Co. of New England, 130 W. Emerson St.
Memphis, Tenn.–Reichman, Crosby Hays Co., 223 S. Front St.
Milwaukee, Wis.–Max Weiss Co., 1164 N. 54th St.
Minneapolis, Minn.–R. G. Eide, Inc., 309 Washington Ave., N.
Mobile 6, Ala.–Gulf Coast Marine Supply Co., Royal & Monroe Sts.
Monterey Park, Calif.–R. & O. Tool Co., 243 E. Pomona Blvd.
New Orleans, La.–Standard Supply & Hardware Co., 822-866 Tchoupitoulas St.
New York, N.Y.–Brundage Supply Corporation, 192-194 Front St.
New York, N.Y.–Coston Supply Co., 31 Water St.
New York, N.Y.–Hansen & Yorke Co., Inc., 86-90 Warren St.
New York, N.Y.–William Swan & Sons, 62 Front St.
Ogden, Utah–Aviation Industrial Supply Co., 2881 S. 1100 West
Orlando, Florida–Engel's, 46 W. Church St.
Paducah, Ky.–Henry A. Petter Supply Co., 117 S. First St.
Philadelphia, Pa.–A-C Supply Co. of Philadelphia, 1330 Federal St.
Philadelphia, Pa.–The Amco Corp., 1720 Callowhill St.
Philadelphia, Pa.–Casanave Supply Co., 2028-32 Sansom St.
Pittsburgh, Pa.–Weldcraft Equipment Co., 5100 Liberty Ave.
Portland, Ore.–Industrial Specialties Co., 940 S. E. 7th Ave.
Portsmouth, Va.–Morse-Parker Motor Supply Co., 809-815 High St.
Richmond, Va.–Watkins-Cottrell, 109-125 S. 14th St.
Saginaw, Mich.–McGill Sales, 1905 S. Michigan Ave.
St. Louis, Mo.–General Equipment Co., 3952 Clayton Ave.
St. Louis, Mo.–Moehlenpah Engineering, Inc., 1317 S. Vandeventer
San Francisco, Calif.–C. J. Hendry Co., 139 Townsend St.
San Diego, Calif.–Bailey Equipment Co., 3856 California Ave.
San Pedro, Calif.–C. J. Hendry Co., 111 S. Front St.
Seattle, Wash.–Aronson's Hardware Co., 1415 First St.
Toledo, O.–The Amco Corp., 1301 Jackson Ave.
Tulsa, Okla.–N. A. Doolittle, 1850 E. 16th Place
Wilmington, Del.–Holloway Bros., Capitol Trail & Kirkwood Hwy.
Woodbridge, N.J.–Hansen & Yorke Co. of New Jersey, 455 Green St.

Montreal, Que., Canada–Safety Supply Co., 5545 St. James St., W.
Toronto, Ontario, Canada–Safety Supply Co., 214 King St., E.

ANDOVER INC.,
A Div. of North Shore Manufacture
1270 N. W. 165th Street, North Miami Beach 69, Florida

Branch Offices:

Angola, Ind.–105 Lakeshore Drive
Burlingame, Calif.–1299 Bayshore Highway
Cedar Rapids, Iowa–1305 Oakland Gardens
Chicago 39, Ill.–5222 W. Diversey Ave.
Dallas 19, Texas–3603 Lemmon Ave.
Dayton 19, Ohio–2801 Far Hills Avenue
Indianapolis, Ind.–6215 Carrollton
Kansas City, Mo.–4550 Main Street
Monroeville, Penn.–1974 Gregory Avenue
Narberth, Penn.–108 Forest Avenue
St. Louis 30, Mo.–6717 Vernon Ave.
Silver Spring, Md.–880 Bonifant Street
West Richfield, Ohio–3435 Streetsboro Road
Wichita, Kansas–247 South Pinecrest
Winston-Salem, N. C.–2080 Beach Street, P. O. Box 2356

Distributors:

Buffalo 23, N.Y.–The Elmwood Corp., 2180 Elmwood Ave.
Cleveland 12, Ohio–Standard Glove Company, 13200 Woodworth Rd.
Denver 2, Colo.–Rae Fire Protection, Inc., 1921 Blake St.
Englewood, N. J.–F. D. Products, 90 Tracey Place-NI
Largo, Fla.–Car-Med Safety Equip. Co., 570 N. Indian Rocks Rd.
Los Angeles 28, Calif.–American Safety Products Co., 3197 Cahuenga
Los Angeles, Calif.–Guardian Safety Equip. Co., 7223 S. Main St.
Macon, Ga.–Mid-State Welding & Supply Co., Inc., 1202-5th St.
Newark, Ohio–Electric Wholesale, Inc., 31-35 North 5th St.
Newton Centre, Mass.–Hub Safety Equip., Inc., 10 Nightingale Path
Philadelphia 50, Penn.–General Scientific Equip. Co., P. O. Box 3038
Vincennes, Ind.–Welton Safety Equip. Co., 504 Hart St., P. O. Box 191

ANSUL CHEMICAL COMPANY
One Stanton Street, Marinette, Wisconsin
**See ad page 237.

Branch Offices:

Atlanta 10, Ga.–1066 Murphy Avenue, S. W.
Baltimore 1, Md.–c/o Roche & Hull, Inc., 1107 Maryland Ave.
Baton Rouge, Louisiana–401 Cloud Drive
Billings, Montana–2312 Belknap Avenue
Chicago 17, Illinois–6933 Stoney Island Avenue
Cincinnati, Ohio–1547 North Bend Road
Cleveland 15, Ohio–1048 Hanna Building, Euclid Ave. & East 14th St.
Dallas, Texas–P. O. Box 28164
Davenport, Iowa–725 Union Arcade Building
Detroit 35, Mich.–16115 Myers Road
Elmhurst, Ill.–Room 319, Elm Square Bldg., 110 Schiller St.
Fort Worth 18, Texas–3108 Gerome
Houston 23, Texas–P. O. Box 18445
Indianapolis 21, Ind.–Turner Bldg., Weir Cook Municipal Airport
Kansas City, Mo.–3303 Gillham Road, P. O. Box 4755
Knoxville 21, Tenn.–c/o Commercial Warehouse, 700 Dale Avenue
Los Angeles 22, Calif.–6470 Corvette Street
Midland, Texas–1604 Neely
New York 6, New York–74 Trinity Place-Room 1109
North Tonawanda, N. Y.–P. O. Box 548
Oakland 6, Calif.–702 East 14th Street
Paoli, Pa.–24 State Road, P. O. Box 306
Pittsburgh 16, Pa.–295 Beverly Road
St. Louis 3, Mo.–3230 Olive Street
Seattle 4, Wash.–c/o Commercial Warehouse, 3623 6th Ave., S.
Tulsa, Okla.–1015 South Cincinnati

Distributors:

Atlanta 5, Ga.–Southeastern Safety App., Inc., 730 Miami Circle, N. E.
Boston 10, Mass.–General Equip. Corp., 261 Franklin St.
Minneapolis 4, Minn.–Elmer C. Peterson Co., 1527 E. Franklin Ave.
Honolulu, Hawaii–P. S. Pell & Co., Ltd., 330 Cooke St., P. O. Box 1441
Salt Lake City, Utah–Universal Safety & Fire Equip., 727 S. W. Temple Street

Toronto, Ontario, Can.–Levitt-Safety, Ltd., 747 Vaughn Road

ARMSTRONG MACHINE WORKS
Three Rivers, Mich.

Distributors:

Anchorage, Alaska–Arthur Forsyth Co., 119 E. Sixth Ave.
Atlanta 10, Ga.–Abbey Steam Specialty Co., 884 Murphy Ave., S. W.
Arlington 74, Mass.–Power Specialties Co., Inc., 171 Broadway
Baltimore 11, Md.–Wm. A. Milby Co., 2701 Cresmont Ave.
Birmingham 1, Ala.–Southeastern Products Corp., 1401 Lomb Ave.
Buffalo 13, N.Y.–Award Equip. Co., Inc., 906 Niagara
Charlotte, N.C.–Allan T. Shepherd Co., P.O. Box 1423
Chicago 43, Ill.–Affiliated Steam Equip. Co., 1921 W. Monterey
Cincinnati 2, O.–Robertson-Wherritt Co., 426 Transportation Bldg.
Dallas 2, Texas–Geo. B. Allan Co., 801 S. Akard St.
Denver 17, Colo.–Hendrie & Bolthoff Co., 1635 17th St.
Des Moines 9, Ia.–Fred E. Triggs, 200 Plymouth Bldg.
Detroit 3, Mich.–Werlo Steam Equip. Co., 1506 E. State Fair
Erie, Pa.–Award Equip. Co., 2942 Peach St.
Evansville 8, Ind.–Evansville Supply Co., 810 Pennsylvania Ave.
Grand Rapids, Mich.–Frank G. 'Bud' Wilson, 523 Fulton St., W.
Greensboro, N.C.–Allan T. Shepherd Co., P.O. Box 1451
Greenville, S.C.–Allan T. Shepherd Co., P.O. Box 322
Henrietta, N.Y.–Award Equipt. Co., 5093 E. Henrietta Rd.
Honolulu 3, Hawaii–Foster Equip. Co., Ltd., P.O. Box 2834
Houston, Texas–Geo. B. Allan Co., Universal Warehouse, 1006 Washington Ave.
Indianapolis 9, Ind.–Indianapolis Belting & Sup. Co., 34 So. Capitol
Kansas City 11, Mo.–Hughes Machinery Co., 4212 Main St.
Knoxville 5, Tenn.–Lehnert's, Inc., P.O. Box 508, 412 Fifth Ave.
Los Angeles 15, Calif.–Guy L. Warden & Sons, 209 W. 12th St.
Louisville, Ky.–Graft-Pelle Co., 309 W. Main St.
Memphis 12, Tenn.–Power Equip. & Engrg. Co., P.O. Box 7507
Milwaukee 16, Wis.–Williams-Settle, Inc., 6635 W. Capitol Drive
Minneapolis 6, Minn.–Diesi-Evans Co., 2803 Riverside Drive
New Haven 17, Conn.–Hoyt-Grant Co., 3013 Dixwell Ave., Hamden
New Orleans 19, La.–Louisiana Steam Equipment Co., 1118 Tchoupitoulas St.
New York 7, N.Y.–Advance Engineering Co., 69 Dey St.
Philadelphia 7, Pa.–Associated Steam Spec. Co., 810 Race St.
Phoenix, Ariz.–John W. Ladlow, P.O. Box 1784
Pittsburgh 22, Pa.–J. F. Munn Co., 104 Market St.
Portland 14, Ore.–E. S. Constant Co., 1814 S. E. 7th Ave.
Richmond 10, Va.–Allan T. Shepherd Co., P.O. Box 1243
St. Louis 3, Mo.–O'Brien Equip. Co., 2832 Olive St.
Salt Lake City 1, Utah–Pace-Turpin & Co., 726 S. 3rd West St.
San Francisco 7, Calif.–Refrigerating & Power Spec. Co., 380 Brannon
Scranton 3, Pa.–H. G. Murphy Sales, Inc., 802 Scranton Natl. Bank Bldg.
Seattle 99, Wash.–Arthur Forsyth Co., 2800 19th Ave., West
South Bend 23, Ind.–Smith-Monroe Co., 1012 S. Main St.
Spokane 8, Wash.–Arthur Forsyth Co., N. 120 Division St.
Syracuse 4, N.Y.–The R. J. Denton Co., 140 Dickerson St.
Tampa 2, Fla.–J. W. Sherman, 317 S. Florida Ave.
Wooster, O.–Steam Economies Co., Quinby Bldg.

Canadian Representatives:
Downsview, Ont.–A. S. Leitch Co., Ltd., 33 Torbarrie Rd.
Montreal 15, Que.–Preston, Phipps Inc., 940 Ogilvy Ave.
Vancouver 10, B.C.–General Equip. Ltd., 224 W. 5th Ave.
Winnipeg 2, Man.–Kipp Kelly Limited, 68 Higgins Ave.

Mexican Representatives:
Mexico 7, D. F. Mex.–Wisco S. A., Dr. Jimenez No. 33

ASSOCIATED BAG & APRON CO.
901 W. Huron St., Chicago 22, Ill.
**See ad page 188.

Distributors:

Chicago, Ill.–Scientific Industrial Supply Co., 17 E. 23rd St.
Chicago, Ill.–Superline Products Co., 2426 W. North Ave.
Indianapolis, Ind.–Roger Popp, Inc., 411 E. Wabash St.
New York 7, N.Y.–Miller Products Co., Inc., 29 Warren St.
Saginaw, Mich.–National Safety Products Co., 116 N. Hamilton St.

ATLANTIC INDIA RUBBER WORKS, INC.
571 West Polk St., Chicago 7, Ill.
**See ad page 216.

ATLAS SAFETY EQUIPMENT COMPANY, INC.
175–179 N. 10th St., Brooklyn 11, N.Y.
**See ad page 190.

Distributors:

Denver 16, Colo.–Union Supply Co., 5460 Colorado Blvd.
Newton Centre, Mass.–Hub Safety Equip., 10 Nightingale Path

ATOMIC ACCESSORIES, INC.
811 West Merrick Rd., Valley Stream, N.Y.

Sales Representatives:

Atlanta 5, Ga.–3127 Maple Dr. N.E.
Bethesda, Md.–9403 Fresno Rd.
Cambridge 38, Mass.–33 University Rd.
Chicago 11, Ill.–940 N. Lake Shore Dr.
Dallas, Texas–56-35 Vale Blvd.
Gardena, Calif.–2312 W. Redondo Beach Blvd.
Jenkintown, Pa.–413 Johnson St.
Livonia, Mich.–30129 Minton
San Francisco 24, Calif.–1485 Bayshore Blvd.
Valley Stream, N.Y.–811 W. Merrick Rd.
Westlake, O.–2708 Northglen Rd.

AUDIO EQUIPMENT CO., INC.
P.O. Box 192, Port Washington, N.Y.
**See ad page 254.

AUTH ELECTRIC COMPANY
34-20 45th St., Long Island City, New York, N.Y.

Branch Offices:

Los Angeles, Calif.–429 S. Western Ave.
St. Louis, Mo.–7818 Forsyth Blvd.

AUTO VIEW WELDING HELMET CO.
510 Central Tower Bldg., 1424 4th St., Santa Monica, Calif.

AUTOCALL COMPANY, THE
161 Tucker Ave., Shelby, Ohio

Branch Offices:

Atlanta 3, Ga.–333 Candler Bldg.
Chicago 49, Ill.–1733 East 75th Street
Cincinnati 8, Ohio–2637 Erie Ave., P.O. Box 114, Station "O"
Cleveland 7, Ohio–16202 Hilliard Road
Dallas 1, Texas–504 Interurban Bldg.
Detroit 2, Michigan–339 Curtis Bldg.
Hartford, Connecticut–420 Hopmeadow Street
Houston 4, Texas–4006 La Branch
Los Angeles 15, Calif.–1420 West Ninth Street
Milwaukee 3, Wis.–2333 West Wells St.
New York 17, N.Y.–521 Fifth Ave., Suite #2403
Philadelphia 3, Pa.–1720 Sansom Street
Pittsburgh 36, Pa.–90 Clairton Blvd.
St. Louis 5, Mo.–34 North Brentwood Blvd.
Salt Lake City, Utah–122 Social Hall Ave.
San Francisco 3, Calif.–360 Sixth Street

AYERST LABORATORIES
22 E. 40th St., New York 16, N.Y.

AZROCK FLOOR PRODUCTS
P.O. Box 531, San Antonio, 6, Texas

BABACO ALARM SYSTEMS, INC.
725 Washington St., New York 14, N.Y.

Branch Offices:

Chicago 16, Ill.–2520 So. Wabash Ave.
No. Hollywood, Calif.–12135 Chandler Blvd.

BABCOCK, W. W., CO., INC.
Drawer 550, Bath, N.Y.

Continued on next page

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

BACHARACH INDUSTRIAL INSTRUMENT CO.
200 N. Braddock Ave., Pittsburg 8, Pa.
**See ad page 253.

Distributors:

Distributors in principal cities.

BAKER INDUSTRIAL TRUCKS
A Division of Otis Elevator Company
8034 Baker Avenue, Cleveland 2, Ohio

Branch Offices:

Dallas, Texas—910 North Industrial Blvd.
Decatur, Ga.—262 Rio Circle
Detroit, Mich.—26000 West Eight Mile Rd.
Chicago, Ill.—5627 South Harlem Ave.
East St. Louis, Ill.—9 Judith Lane
New York, N. Y.—260 Eleventh Ave.
Portland Oregon—5320 S. E. 26th Ave.

Distributors:

Albany, N. Y.—Royce W. Day Co., P. O. Box 757, Schenectady Rd.
Baltimore, Md.—S. W. Betz Co., Inc., 2229-2239 Kirk Ave.
Birmingham, Ala.—Ebbert & Kirkman Co., 720 South 23rd St.
Buffalo, N. Y.—Buffalo Materials Handling Corp., 243 Manhattan Ave.
Chattanooga, Tenn.—The Ormsbee Machinery Co., 1308 E. 23rd St.
Cincinnati, Ohio—M. W. McMillian Co., 4450 Emerald Ave.
Cleveland, Ohio—The A. J. Gates Co., 1741-9 East 25th St.
Columbus, Ohio—Ludlow Sales & Service, 1763-1775 South High St.
Denver, Colo.—Kelley-Fox Co., 327 South Inca St.
Des Moines, Iowa—Globe Machy. & Supply Co., East 1st & Court Ave.
El Paso, Texas—Hirsch Bros. Machinery Co., Inc., 1901 Bassett Ave.
Erie, Pa.—Erie Materials Handling Corp., 2401 W. 12th St.
Forest Park, Ill.—Fork Truck Leasing Inc., 7626 W. Madison St.
Fort Wayne, Ind.—B & M Materials Handling Equip. Co., P. O. Box 956
Greenville, S. C.—Baker Mfg. Co., 5 Ellendale Ave.
Harrisburg, Pa.—Lift Truck Service Inc., 4200 McIntosh Rd.
Hicksville, L. I. N. Y.—Mineola Mack Dist. Inc., Oyster Bay Rd.
Houston, Tex.—Materials Handling Equip. Corp., 7131 Navigation Blvd.
Huntington, W. Va.—Banks-Miller Supply Co., 330 Third Ave.
Indianapolis, Ind.—Stone Eng. Co., Inc., 5851 E. 34th St.
Jacksonville, Fla.—Davis' Garage, 527 Ballough Rd.
Jacksonville, Fla.—M-H Industrial Equip. Co., P. O. Box 2488
Kansas City, Kansas—Rivard Sales Co., 2540 W. 47th St.
Knoxville, Tenn.—The Dempster Machine Shop, Inc., 1649 Riverside
Lima, Ohio—Rider Industrial Trucks, #817-818 National Bank Bldg.
Little Rock, Ark.—Bigelow Robinson Co., 800 W. 8th St.
Los Angeles, Calif.—Green-Penny Co., 4180 E. Noakes St.
Louisville, Ky.—Bohnert Equip. Co., 104 West Main St.
Memphis, Tenn.—John C. Hines Co., P. O. Box 5554 Crosstown Sta.
Milwaukee, Wis.—Bader Industrial Trucks, 3822 West National
Minneapolis, Minn.—Handling Equip. Co., 704 Portland Ave.
Muskegon, Mich.—Engineering & Materials Handling Ind., 487 West Forest Ave.
Nashville, Tenn.—Baker Lift Truck Service Co., 316 Sixth Ave., S.
Needham Heights, Mass.—L. A. Whitney Co., Inc., 50 Kearney Rd.
New Orleans, La.—Allied Equip. Sales Inc., 4040 Veterans Memorial Highway, Metairie
Omaha, Neb.—Blackey's Machine Service Co., 1810 Cuming St.
Peoria, Ill.—W. D. Vanderipe & Assoc., 939 Schmidt Ave.
Pittsburgh, Pa.—Mahaffey Equip. Co., 1200 Freeport Rd.
Rosemont, Pa.—DeHuff & Hopkins, 910 Conestoga Rd.
Saginaw, Mich.—Industrial Lift Truck Sales, 2409 Hess St.
San Francisco, Calif.—Elder & Co., 333 Seventh St.
Tulsa, Okla.—Materials Handling Inc., P. O. Box 15609-Admiral Sta.
Wilkes-Barre, Pa.—Ensminger & Co., Inc., South Franklin & Wood St.

Weston, Toronto, Ontario—Gordon N. Johnson, 132 Rivalda Rd.

BAKER-ROOS, INCORPORATED
602 W. McCarty Street, Indianapolis 6, Indiana

Distributors:

Abington, Pa.—C. A. Bayard, 1425 Edgehill Rd.
Atlanta, Ga.—Hall Steel Co., 1480 La France St., N. E.
Baltimore, Md.—Wm. F. Walker, Jr., 130 W. Hamilton St.
Cambridge, Mass.—Pitcher & Co., Inc., 67 Rogers St.
Chicago, Ill.—James L. Lyon Co., 310 S. Peoria St.
Cleveland, Ohio—Gibson Equip. Co., 3440 E. 93rd St.
Dallas, Texas—United Tile Co., 901 S. Good-Latimer Rd.
Dearborn, Mich.—R. E. Leggate Co., 9395 St. Stephens St.
Denver, Colo.—Lauren Burt, Inc., 3254 Walnut St.
Jacksonville, Fla.—Acousti Engrg. of Fla., Inc., 101 Copeland St.
Kansas City, Mo.—Henges Co., Inc., 3007 E. 85th St.
Los Angeles, Calif.—Cramer Acoustics, 1001 Glendale Blvd.
Miami, Fla.—Acousti Corp. of Miami, 3737 N. W. 53rd St.
Minneapolis, Minn.—Insulation Sales Co., 20 Lakeside Ave.
New Orleans, La.—Acoustics & Specialties, Inc., 1020 Calliope St.
New York, N. Y.—Fireproof Prod. Co., Inc., 138 Bruckner Blvd.
Pittsburgh, Pa.—Geo. P. Little Co., Inc., 1088 Pennsylvania Ave.
St. Louis, Mo.—M. J. Struckel & Co., 3216 Big Bend Blvd.
San Francisco, Calif.—Cramer Acoustics, 1035 Folsom St.
Seattle, Wash.—Noise Control of Seattle, Inc., 600 W. Nickerson St.
Syracuse, N. Y.—Collum Acoustical Co., Inc., 918 Canal St.
West Haven, Conn.—Thermal Acoustics, Inc., 81 Farwell St.

BALLYMORE COMPANY
Lincoln & Garfield Aves., West Chester, Pa.
**See ad pages 59 and 64.

Distributors:

Birmingham, Ala.—Safety Engineering & Supply Co., Inc., 617 N. 10th
Phoenix, Ariz.—Kinney Materials Handling Equip., Inc., 929 Grand
San Francisco, Calif.—Hamersing Equip. Co., 110 Freeway Blvd., So.
Denver, Colo.—Snyder Metal Equip. Co., 2944 Larimer
Madison, Conn.—J. J. McArdle Co., Box 167
Jacksonville, Fla.—Cameron & Barkley Co., Barkley Bldg., Box 5837
Jacksonville, Fla.—M-H Industrial Equip. Inc., 1062 W. Adams St.
Atlanta, Ga.—Ladder Distributing Co., 760 Edgewood Ave.
Evanston, Ill.—American Hospital Supply Corp., 2020 Ridge Ave.
Chicago 40, Ill.—Material Flow, Inc., 1414 Winnemac Ave.
Chicago 10, Ill.—Cole-Parmer Inst. & Equip. Co., 224 W. Illinois
Chicago 47, Ill.—Durable Products, 2100 California Ave.
Chicago 40, Ill.—Precision Equip. Co., 4401 N. Ravenswood Ave.
Terre Haute, Ind.—Industrial Supply Co., 322-28 N. Ninth St.
Indianapolis, Ind.—Midwest Fire & Safety Equip. Co., Inc., 1605 Prospect St.
Indianapolis, Ind.—E. C. Stark Co., Inc., 319 N. Capitol Ave.
South Bend, Ind.—Cass Hudson Co., 1013 S. Michigan St.
Fort Wayne, Ind.—Mansfield Handling Corp., 3308 Rosewood Dr.
Des Moines, Iowa—Ahern-Pershing, 905-07 Locust
Des Moines, Iowa—Globe Machinery & Supply Co., E. 1st & Court Ave.
Louisville, Ky.—Orr Safety Equip. Co., 300 E. Main
South Portland, Me.—James Wiltsie Co., Inc., 100 Main St.
Boston 19, Mass.—Boston Ladder & Equip. Co., Inc., 80 Hampden St.
Cambridge, Mass.—Langley Corp., 920 Cambridge St.
Detroit 2, Mich.—Glenn P. Crissman Co., 670 W. Baltimore Ave.
Detroit 40, Mich.—Rayhaven Equip. Co., 26799 W. 8 Mile Rd.
St. Paul 14, Minn.—Haldeman-Homme, Inc., 2580 University Ave.
St. Louis 10, Mo.—Materials Handling Equip., Inc., 5075 Manchester Ave
Kansas City, Mo.—G. W. Van Keppel Co., 2461 Penway
Omaha 31, Neb.—Frank L. Young Co., 2565 Dodge St.
Bloomfield, N. J.—American Service Co., Inc., 16 Molter Place
Buffalo 16, N. Y.—Larson Equip. Co., Inc., 2558 Delaware Ave.
Syracuse, N. Y.—Material Handling Products Corp., Box 246, Eastwood Station
Schenectady, N. Y.—Syracuse Supply Co., Intercity Div.
Cincinnati, Ohio—Furnish Equip. Co., 4314 Montgomery Rd.
Cleveland 4, Ohio—Robert M. Slife & Assoc., Inc., 2754 Woodhill Rd.
Toledo 13, Ohio—Harold G. Taylor Co., 4023 Upton Ave.
Portland 9, Ore.—F. E. Bennet Co., 426 N. W. 6th Ave.
Philadelphia 7, Pa.—Fred Hill & Son, Co., 10th & Cherry Sts.
Pittsburgh 8, Pa.—J. R. Fuller Co., 7033 Kelly St.
Shamokin, Pa.—Jones Hardware
Providence, R. I.—Paul M. Jackson Co., 157 Crary St.
Knoxville, Tenn.—Fidelity Sales Corp., Box 626
Memphis, Tenn.—Wurzburg Bros., Inc., P. O. Box 2707
Houston 2, Tex.—Sinclair Sales Co., Inc., 376 M & M Bldg.
Richmond 19, Va.—All Metal Equip. Co., 403 E. Franklin St.
Norfolk, Va.—Engineering Steel Equip. Co., 719 Granby St.
Seattle, Wash.—F. T. Crowe & Co., 325 Second Ave., W.
Charleston, W. Va.—Jefferds & Moore, Inc., P. O. Box 4398
Clarksburg, W. Va.—Prosperity Equip. Co., P. O. Box 708

BASHLIN, W. H., CO.
P. O. Box 150, Grove City, Pa.
**See ad page 170.

Distributors:

Atlanta, Ga.—Southern Elect. Equip. Dist., 1375 Lee St., S. W.
Birmingham, Ala.—Mill & Textile Supply Co.
Charlotte, N. C.—Mill Power Supply Co., 422 S. Church
Charlottesville, Va.—Pankey Supply Co., Box 1070
Denver, Colo.—H. C. Guire & Co., 715 S. York St.
Des Moines, Iowa—Midwest Supply Co., 601 Paramount Bldg.
E. Orange, N. J.—New Jersey Safety Equip. Co., 299 Park Ave.
Florida—General Elect. Supply Co.
Florida—Hughes Supply Co.
Florida—Raybro Elect. Supplies, Inc.
Ft. Wayne, Ind.—Safety Equip. & Supply Co., 1724 W. Main St.
Ft. Worth, Tex.—J. L. Matthews Co., 3717 McCart St.
Indianapolis, Ind.—Midwest Fire & Safety Equip. Co., 1605 Prospect
Kansas City 15, Kan.—Zink Safety Equip. Co., 1401 Fairfax Trfwy.
Knoxville, Tenn.—Jones & Lee Supply Co., 1104 McCalla
Los Angeles, Calif.—Guardian Safety Equip. Co., 7223 S. Main St.
Memphis, Tenn.—Utilities Equip. Co., 821 S. Barksdale
Milwaukee, Wis.—Pagel Safety Products, 4611 W. Nat'l Ave.
Minneapolis, Minn.—Dolan-Feldhaus Co., 5 West Lake St.
Newton Lower Falls, Mass.—A & S Power Equip. Inc., 2300 Washington St.
New York, N. Y.—Copperweld-Steel International Co., 225 Broadway (Export)
Portland, Ore.—Sanderson Safety Supply Co., 816 S. E. Hawthorne
Rice Lake, Wis.—Black's Linemen's Supply, 9 W. Newton
Roanoke, Va.—Nelson Hardware Co., 901 11th St., N. E.
Rocky Mount, N. C.—Eastern Electric Supply, 822 S. Church St.
St. Louis, Mo.—Zink Safety Equip. Co., 7470 St. Charles Rock Rd.
Salt Lake City, Utah—Pole Line Dist. Co., P. O. Box 2405
Salt Lake City, Utah—Universal Safety & Fire Equip. Co., P. O. Box 1587
San Francisco, Calif.—Westers Hardware & Tool Co., 122 10th St.
Seattle, Wash.—Jack Pruzan Co., 1963 First Ave. S.
Syracuse, N. Y.—Carlen Representatives, 132 Burnet Ave.
Tiffin, Ohio—J. O. Numper Co., Box 615
Wolfebor, N. H.—Hawkins Safety Equip. Co.
Toronto, Ont., Canada—A. B. Chance Co. of Canada, Ltd., Box 10

BAUER MANUFACTURING COMPANY, THE
1000 E. Bowman Street, Wooster, Ohio

BAUSCH & LOMB INCORPORATED
635 St. Paul Street, Rochester 2, New York
**See ad page 111.

Branch Offices:

Albany, Ga.—5 Broad Arcade, P. O. Box 87
Albany 1, N. Y.—42 Steuben St., P. O. Box 1103
Albuquerque, N. M.—111 7th St., N. W., P. O. Box 547
Amarillo, Texas—216 E. 7th St., P. O. Box 109
Appleton, Wis.—Spector Bldg., 107 S. Appleton St., P. O. Box 168
Asheville, N. C.—314 Flatiron Bldg., P. O. Box 531
Atlanta, Ga.—18 Marietta St., N. W.
Atlanta 2, Ga.—Rhodes Bldg. Annex, 78 Marietta St., N. W., P. O. Box 4388
Bakersfield, Calif.—225 Sill Bldg., 1508 18th St., P. O. Box 1592
Baltimore 3, Md.—119-121 W. Mulberry St., P. O. Box 1683
Baton Rouge 1, La.—814 Main St., P. O. Box 1229
Birmingham 1, Ala.—305 Bell Bldg., 1814 2nd Ave. N., P. O. Box 2511
Boise, Idaho—223 Eastman Bldg., Main & 8th Sts., P. O. Box 1578
Boston, Mass.—110 Tremont St.
Buffalo 3, N. Y.—737 Main St.
Burlington, Vt.—192 College St.
Carbondale, Ill.—1089 N. Illinois Ave., P. O. Box 560
Casper, Wyo.—45 Buda Bldg., 141 N. Durbin St., P. O. Box 2330
Cedar Rapids, Iowa—208-A Guaranty Bk. Bldg., 3rd Ave. & 3rd St. E., P. O. Box 970
Charleston, S. C.—770 Wentworth St., P. O. Box 603
Charlotte 1, N. C.—1209 E. Sixth St., P. O. 2538
Chattanooga 1, Tenn.—311 Chattanooga Bk. Bldg., 6th & Market Sts., P. O. Box 589
Chicago 6, Ill.—740 W. Washington Blvd.
Chicago South 20, Ill.—7959 S. Western
Clinton, Iowa—203 Wilson Bldg., 217 5th Ave., So., P. O. Box 87
Colorado Springs, Colo.—8 S. Wahsatch, P. O. Box 1084
Columbia 1, S. C.—Palmetto State Life Ins. Bldg., 1310 Lady St., P. O. Box 1225
Dallas 1, Texas—739 N. Pearl St., P. O. Box 2091
Davenport, Iowa—310 1st Nat'l Bk. Bldg., 2nd & Main Sts., P. O. Box 238
Daytona Beach, Fla.—2484 S. Beach St., P. O. Box 1110
Dearborn, Mich.—202000 W. Outer Dr.
Denver 2, Colo.—2115 E. 17th Ave., P. O. Box 1260
Des Moines 6, Iowa—314 Bankers Trust Bldg. W. Sixth & Locust Sts., P. O. Box 1575
Elkhart, Ind.—543 Equity Bldg., 429 S. Second St.
El Paso, Texas—601 Mills Bldg., 309 N. Oregon St., P. O. Box 91
Eugene, Ore.—316 Eugene Medical Center Bldg., 140 E. Broadway, P. O. Box 1106
Evansville, Ind.—100 Main St., P. O. Box 94
Fargo, N. D.—606 1st Nat'l Bk. Bldg., 15-17 Broadway, P. O. Box 631
Fort Smith, Ark.—1605 N. "B" St., P. O. Box 852
Fort Worth 2, Texas—108 E. 11th St., P. O. Box 750
Fremont, Neb.—I. O. O. F. Bldg., 635 N. Main St., P. O. Box 390
Fresno, Calif.—2014 Tulare St., 410-B Patterson Bldg., P. O. Box 847
Grand Island, Neb.—312 Hedde Bldg., 216½ N. Locust St., P. O. Box 727
Great Falls, Mont.—320 Strain Bldg., 420 Central Ave., P. O. Box 1259
Green Bay, Wis.—526 Nat'l Exchange Bk. Bldg., 104 S. Main St., P. O. Box 634
Greeley, Colo.—K. P. Hall, 814½ 9th St., P. O. Box 716
Greenville, S. C.—114½ N. Brown St., P. O. Box 928
Harrisburg 1, Pa.—State St. Office Bldg., 3rd & State Sts., P. O. Box 289
Harrisonburg, Va.—48 E. Market St., P. O. Box 669
Hartford, Conn.—70 Temple St., P. O. Box 508
Hattiesburg, Miss.—405 Carter Bldg., P. O. Box 910
Hicksville, L. I., N. Y.—14 Herzog Place
Hollywood 28, Calif.—414 Security Bk. Bldg., 6381 Hollywood Blvd.
Houston, Texas—2634 S. Shephard, P. O. Box 3009
Hudson, N. Y.—545 Washington St.
Huntington Park, Calif.—6220 Pacific Blvd., P. O. Box 469
Iowa City, Iowa—Morrison Bldg., 203½ E. Washington St., P. O. Box 146
Jackson, Miss.—515½ E. Pearl St., P. O. Box 898
Jacksonville 1, Fla.—213 Professional Bldg., 126 W. Adams St. P. O. Box 4638
Jamestown, N. Y.—22-26 Phillips Bldg., 203 Cherry St., P. O. Box 744
Kalispell, Mont.—225 Buffalo Block, 234 Main St.
Kansas City, Mo.—2727 Oak St.
Kingsport, Tenn.—Center Key Bldg., 244 E. Center St., P. O. Box 951
Klamath Falls, Ore.—201 Med-Dental Bldg., 9th & 10th on Main St.
Knoxville 1, Tenn.—419 W. Church Ave., P. O. Box 336
Lake Charles, La.—1417 Ryan St., P. O. Box 1033
Lancaster, Pa.—21 E. Orange St., P. O. Box 277
Lincoln, Neb.—750 Stuart Bldg., 128 N. 13th St., P. O. Box 1068
Little Rock, Ark.—217 W. 7th St., P. O. Box 310
Long Beach, Calif.—403 Hearwell Bldg., 19 Pine Ave.
Los Angeles, Calif.—500 Optical Bldg., 314 W. Sixth St.
Los Angeles, Calif.—314 W. Sixth St.
Lynn 1, Mass.—1 Market St.
Macon, Ga.—Bankers Ins. Bldg., 211 Cotton Ave., P. O. Box 257
Madison 3, Wis.—432 State St., P. O. Box 752
Malden 48, Mass.—28 Eastern Ave.
Mankato, Minn.—108-105. 2nd St., 1st Fl. Eckman Bldg., P. O. Box 472
Medford 3, Ore.—431 Med. Center Bldg., 33 N. Center Ave., P. O. Box 1367
Memphis 1, Tenn.—188 Jefferson Ave., P. O. Box 246
Miami, Fla.—Olympia Theatre Bldg., 174 E. Flagler St., P. O. Box 2387
Milwaukee 3, Wis.—307-11 Manhattan Bldg., 617 N. 2nd St., P. O. Box 787
Minneapolis 2, Minn.—801 Nicollet Bldg., 808 Nicollet Ave., P. O. Box 106
Minot, N. D.—415 1st Nat'l Bk. Bldg., 1 N. Main St., P. O. Box 1352
Mobile 7, Ala.—53 S. Jackson St., P. O. Box 1253
Nashville 2, Tenn.—Chamber of Commerce Bldg., 315 4th Ave., NO., P. O. Box 1268
Newark 2, N. J.—17 Williams St.
New Orleans 13, La.—718 Perdido St., Wise Bldg., P. O. Box 69
New York 19, N. Y.—730 Fifth Ave.
Norfolk 1, Va.—523 Kresge Bldg., P. O. Box 870
Oklahoma City, Okla.—119 N. Robinson St., 1120 Cravens Bldg., P. O. Box 980
Omaha, Neb.—427 Med. Arts Bldg., 17th & Dodge Sts., P. O. Box 1279
Orlando, Fla.—104 E. Jefferson St., P. O. Box 3282
Petersburg, Fla.—Savage Hotel Bldg., 176 Central Ave., P. O. Box 172
Petersburg, Va.—34 Franklin St., P. O. Box 871
Philadelphia 3, Pa.—1814 Chestnut St.
Phoenix, Ariz.—507 N. 1st St., P. O. Box 491
Pine Bluff, Ark.—401 National Bldg., 2nd & Pine Sts., P. O. Box 1001
Pittsburg, Kan.—121 W. 5th St., P. O. Box 394
Portland, Me.—142 High St., P. O. Box 696
Portland 9, Ore.—7 N. W. Ninth Ave., P. O. Box 4350
Pueblo, Colo.—226 W. 8th St., P. O. Box 534
Quincy, Ill.—1129 Hampshire, P. O. Box 489
Quincy 69, Mass.—77 Parkingway
Raleigh, N. C.—230 Professional Bldg., P. O. Box 269
Reading, Pa.—Medical Arts Bldg., 230 N. Fifth St.
Richmond, Va.—307 E. Franklin St., P. O. Box 1278
Roanoke 10, Va.—115 Kirk Ave., West, P. O. Box 2460
Rochester 4, N. Y.—31 Gibbs St., P. O. Box 751
Rockford, Ill.—512 Talcott Bldg., 315 W. State St., P. O. Box 15
Rome, Ga.—Lam Bldg., 2 S. Sixth Ave., P. O. Box 629
Roswell, N. M.—129 E. Third St., P. O. Box 43
St. Louis, Mo.—2031 Olive St., P. O. Box 178
St. Paul 2, Minn.—372 St. Peter St., P. O. Box 28
Salinas, Calif.—222 Farmers Mercantile Bldg., 308 Main St., P. O. Box 1129
Salt Lake City 1, Utah—405 Darling Bldg., 320 S. Main St., P. O. Box 247
Sacramento 1, Calif.—3018 "J" Street
San Antonio 6, Texas—223 Med. Arts Bldg., 705 E. Houston, P. O. Box 690
San Diego 1, Calif.—403 Bk. of America Bldg., 625 Broadway
San Francisco 2, Calif.—20 Jones St., Box 3225, Rincon Annex
Santa Ana, Calif.—319 W. Third St.
Salem, Ore.—Soars Bldg., 180 S. Church St., P. O. Box 767
Sarasota, Fla.—23 S. Orange Ave., P. O. Box 4041
Seattle 1, Wash.—324 4th & Pike Bldg., 1424 Fourth Ave., P. O. Box 1865
Shreveport 80, La.—1407 Fairfield Ave., P. O. Box 18
Sioux Falls, S. D.—118 N. Main Ave., P. O. Box 914
Spokane 8, Wash.—370 Paulsen Med.-Dental Bldg., 407 W. Riverside Ave., P. O. Box 2139
Springfield 1, Mass.—1618 Main St., P. O. Box 1268
Stockton 5, Calif.—324 Bk. of America Bldg., 345 E. Main St., P. O.

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Safety Products Sources

Box 427
Syracuse 2, N. Y. --Barnes Bldg., 302 S. Warren St.
Tampa, Fla. --312 City Hall Court, P. O. Box 1079
Tulsa 3, Okla. --806 S. Main St., P. O. Box 1597
Utica 2, N. Y. --215 Foster Bldg., 131 Genesee St.
Waco, Texas --404 Waco Med. Arts Bldg., Cor. Austin Ave. &9th St.
Walla Walla, Wash. --4th W. Main St., P. O. Box 474
Washington 5, D. C. --1324 Eye St., N. W.
Waterloo, Iowa--710-14 1st Nat'l Bk. Bldg., 4th & Sycamore Sts., P. O. Box 449
White River Junction, Vt. --Fonda Bldg., P. O. Box 529
Wichita, Kan. --247 N. Market St., P. O. Box 343
Wilkes-Barre, Pa. --400 Miners Nat'l Bk. Bldg.
Wilmington 22, Del. --906 W. St., P. O. Box 626
Wilson, N. C. --109 S. Douglas St., P. O. Box 787
Winchester, Va. --104 S. Loudon St., P. O. Box 277
Winston-Salem 1, N. C. --106 W. Fourth St., 403 Pepper Bldg., P. O. Box 1339
Worcester 8, Mass. --306 Main St., Day Bldg.
York 3, Pa. --11 E. Market St.

Distributors:

Aberdeen, S. D. --N. P. Benson Opt. Co., Inc., 214 Midwest Bldg., P. O. Box 310
Akron 8, Ohio--White-Haines Optical Co., 1012 Akron Savings & Loan Bldg., S. Main & Bowery St.
Alameda, Calif. --Jenkel-Davidson Optical Co., Medical Bldg.,
Albany 7, N. Y. --Kaiser-Fowler Opt. Co., Inc., 44 North Pearl St.
Albert Lea, Minn. --N. P. Benson Opt. Co., Inc., Medical Arts Bldg., P. O. Box 130
Ann Arbor, Mich. --White-Haines Optical Co., 205-207 S. 4th St. 2241 Central Ave.
Barrington, N. J. --Wilkie Optical Co., Shreve & N. J. Turnpike
Battle Creek, Mich. --White-Haines Optical Co., 902 Wolverine Tower, 68 W. Michigan Ave.
Bay City, Mich. --White-Haines Optical Co., 106 Commercial Exchange Bldg.
Beloit, Wis. --N. P. Benson Opt. Co., Inc., 419 Pleasant St., P. O. Box 840, Public Service Bldg.
Berkeley, Calif. --Jenkel-Davidson Optical Co., 210 American Trust Bldg., Shattuck & Center Sts.
Berkeley, Calif. --Jenkel-Davidson Optical Co., Medico-Dental Bldg., 2402 Telegraph Ave.
Bethlehem, Pa. --William H. Price Safety Equip. Co., 78 N. Broad St.
Billings, Mont. --N. P. Benson Opt. Co., Inc., P. O. Box 2563, Beckner Building
Binghamton, N. Y. --Platt & Wren Opt. Co., 163 Washington St., P. O. Box 1084
Bismark, N. D. --N. P. Benson Opt. Co., Inc., 318 Broadway, P. O. Box 540
Brainerd, Minn. --N. P. Benson Opt. Co., Inc., 608 Front St., P. O. Box 474
Burlingame, Calif. --Jenkel-Davidson Optical Co., 238 Park Rd.
Burlington, Vt. --Northeast Optical Co., 19 Church St.
Butte, Mont. --Treasure State Opt. Co., Montana Bank Bldg., P. O. Box 1918
Casper, Wyo. --Western Optical Co., 138 S. Center St., P. O. Box 1932
Chambersburg, Pa. --Martin Safety, 155 S. Main St.
Champaign, Ill. --Jones Optical Co., 120 Walnut St., P. O. Box 519
Charleston, W. Va. --White-Haines Optical Co., Wakefield Bldg., 108 Hale St.
Chicago 90, Ill. --New Era Optical Co., 17 N. Wabash Ave., P. O. Box BB
Chicago 2, Ill. --Palmer Optical Co., Rm. 822-826 Kesner Bldg., 5 N. Wabash Ave.,
Chicago 10, Ill. --Standard Safety Equip., 232 W. Ontario St.
Cincinnati 1, Ohio--White-Haines Optical Co., 1127 Provident Bk. Bldg., P. O. Box 899
Cleveland 6, Ohio--Kimball Safety Products Co., 9310 Wade Park Ave.
Cleveland 14, Ohio--White-Haines Optical Co., 737 Prospect St., P. O. Box 6626
Columbus 15, Ohio--White-Haines Optical Co., 82 No. High St., P. O. Box 1878
Concord, N. H. --Northeast Optical Co.
Corpus Christi, Tex. --Littlepage Opt. Co., 1416 Morgan St., P. O. Box 5326
Cumberland, Md. --White-Haines Optical Co., 68 Pershing St., P. O. Box 746
Dallas, Tex. --Dal-Tex Opt. Co., Inc., 1400 Dragon St., P. O. Box 10026
Danville, Ill. --Jones Optical Co., Adams Bldg., P. O. Box 837
Dayton 1, Ohio--White-Haines Optical Co., 370 Fidelity Bldg., 201 Main St., P. O. Box 911
Detroit, Mich. --Wallace Optical Co., Inc., 1025 Brush St.
Detroit, Mich. --White-Haines Optical Co., 35 W. Grand River, P. O. Box 1458
Dickinson, N. D. --N. P. Benson Opt. Co., Inc., 28 1st Ave., West, P. O. Box 591
Duluth, Minn. --N. P. Benson Opt Co., Inc., 530 Medical Arts Bldg.
East Orange, N. J. --E. H. Notte Safety Appliances, 340 N. Park St.
Eau Claire, Wis. --N. P. Benson Opt. Co., Inc., 318-22 Union Nat'l Bank Bldg., P. O. Box 130
Elkart, Ind. --White-Haines Optical Co., 543 Equity Blvd.
Elmira, N. Y. --Winchester Optical Co., Inc., 213 W. Water St.
Escanaba, Mich. --N. P. Benson Opt. Co., Inc., 1st National Bank Bldg.
Fairfield, Conn. --Fairfield Optical Co., 1998 Post Rd.
Fayetteville, N. C. --City Optical Co., 205 Burgess, P. O. Box 781
Findlay, Ohio--White-Haines Optical Co., 201½ W. Crawford St.
Flint 3, Mich. --White-Haines Optical Co., 410 National Bldg.
Freeport, Ill. --Rockford Opt. Service, Inc., 200 Smith Bldg.
Grand Junction, Colo. --Darnell Optical Co., 528½ Main St., P. O. Box 1601
Grand Rapids 1, Mich. --White-Haines Optical Co., 150 Fountain St., N. E.
Greensboro, N. C. --Piedmont Opt. Co., 209½ Bellemead St., P. O. Box 1207
Honolulu, T. H. --Welding & Industrial Products, Ltd., 1370 Makaloa St., P. O. Box 3521
Horseheads, N. Y. --Winchester Optical Co., Inc., 402 Franklin St.
Huntington 18, W. Va. --White-Haines Optical Co., 907 Fifth Ave., P. O. Box 2126
Huron, S. D. --N. P. Benson Opt. Co., Inc., 205 Lamps Bldg., P. O. Box 834
Idaho Falls, Idaho--Western Optical Co., 201 Slusser Bldg., P. O. Box 1056
Indianapolis 6, Ind. --White-Haines Optical Co., Hume-Mansur Bldg., 27 E. Ohio St., Box 795
Ironwood, Mich. --N. P. Benson Opt. Co., Inc., 219 S. Suffolk St., P. O. Box 391
Johnstown, Pa. --Keller-Irwin Opt. Co., 536 Main St.
Kansas City 13, Mo. --O. H. Gerry Opt. Co., 221 Professional Bldg., P. O. Box 2567
La Crosse, Wis. --N. P. Benson Opt. Co., Inc., 306 Exchange Bldg., P. O. Box 826
Lancaster, Pa. --Berks Optical Co., Inc., 39 E. Orange St.
Las Vegas, Nev. --Western Optical Co., 213 North 3rd, P. O. Box 1388
Lebanon, Pa. --Berks Optical Co., Inc., 527 Cumberland St.
Lewistown, Pa. --Berks Optical Co., Inc., 22 Chestnut St., P. O. Box 54
Lima, Ohio--White-Haines Optical Co., 410 Nat'l Bk. Bldg.
Lorain, Ohio--Reese Optical of Lorain, Inc., 504 E. 28th St.
Los Angeles 7, Calif. --Buell W. Nutt Co., 12016 W. Pico Blvd.
Los Angeles 66, Calif. --Dickson Safety Products Co., 12921 W. Washington Blvd.
Los Angeles 22, Calif. --Halco Supply Co., 1238 S. Atlantic Blvd.
Louisville 1, Ky. --White-Haines Optical Co., 403 Speed Bldg.
Lumberton, N. C. --Lumberton Opt. Co.
Mansfield, Ohio--Reese Optical Co., Inc., 124 W. Third St.
Marion, Ind. --Rockford Opt. Service, Inc., 413 Glass Block Bldg.
Marion, Ohio--White-Haines Optical Co., 508-7 Uhler Bldg., 149½ W. Center St.
Meadville, Pa. --Philadelphia Opt. Co., 256 Chestnut St.
Miles City, Mont. --N. P. Benson Opt. Co., Inc., 906 Main St., P. O. Box 599
Minneapolis 4, Minn. --N. P. Benson, Opt. Co., Inc, 1812 Park Ave.
Minneapolis, Minn. --N. P. Benson Opt. Co., Inc., 1610-A West Lake St.
Modesto, Calif. --Martin's Optical Service, 918C 13th St.
Monterey Park, Calif. --Chas. E. Morton Co., 447 W. Garvey Ave.
Newark, N. J. --Safeguard Industrial Equip. Co., 271 Verona Ave.
Newark, N. J. --Standard Safety Equip., 597 Broadway
New Ulm, Minn. --N. P. Benson Opt. Co., Inc., Fritsche Bldg., P. O. Box 176
Oakland 12, Calif. --Bay Cities Optical Co., 1624 Franklin St.
Oakland, Calif. --Jenkel-Davidson Optical Co., 293 Medical Bldg., 1900 Franklin St.
Oakland, Calif. --Jenkel-Davidson Optical Co., Summitt Medical Bldg. 400 29th St.
Oakland 12, Calif. --Mann Optical Co., 530 15th St.
Oil City, Pa. --Dehn Optical Co., 342 I. O. O. F. Bldg., P. O. Box 64
Olean, N. Y. --Winchester Optical Co., Inc., 107 Armory Place
Palo Alto, Calif. --Jenkel-Davidson Optical Co., 571 Ramona St.
Parkersburg, W. Va. --White-Haines Optical Co., 618 Union Trust Bldg.
Peoria, Ill. --White-Haines Optical Co., 442 Jefferson Bldg., P. O. Box 747
Philadelphia 33, Pa. --Industrial Prod. Co., 2820 N. Fourth St.
Philadelphia 4, Pa. --Philadelphia Opt. Co., 221 N. 12th St., P. O. Box 116
Pittsburgh 22, Pa. --Beitler-McKee Opt. Co., 319 Fifth Ave.
Pittsburgh 22, Pa. --Precision Optical Co., 925 Liberty Ave.
Pittsburgh 30, Pa. --White-Haines Optical Co., Loew-Penn Bldg., 604 Penn Ave., P. O. Box 328
Pottstown, Pa. --Berks Optical Co., Inc., Bahr Arcade
Pottsville, Pa. --Berks Optical Co., Inc., 608 W. Market St.
Portland, Conn. --Corey Optical Co., P. O. Box 33
Portland 16, Ore. --Industrial Air Prod. Co., 1200 N. W. Yeon Ave.
Provo, Utah--Western Optical Co., 275 N. University Ave., P. O. Box 175
Rapid City, S. D. --N. P. Benson Opt. Co., Inc., 611 7th St., 1st Nat'l Bank Bldg., P. O. Box 232
Reading, Pa. --Berks Optical Co., Inc., 520 Walnut St., P. O. Box 1416
Reading, Pa. --Reading Optical Co., 706 Walnut St., P. O. Box 1339
Reno, Nev. --Western Optical Co., 134 E. Second
Richmond, Calif. --Jenkel-Davidson Optical Co., 180 Broadway
Rochester, Minn. --N. P. Benson Opt. Co., Inc., Woolworth Bldg., P. O. Box 860
Rockford, Ill. --Rockford Opt. Service, Inc., 214 S. Church St., P. O. Box 339
Sacramento, Calif. --Precision Optical Co., 1936 Stockton Blvd.
Sacramento, Calif. --Jenkel-Davidson Optical Co., 1021 "K" St.
Saginaw, Mich. --White-Haines Optical Co., 210 Eddy Bldg.,
St. Louis 1, Mo. --Pulmosan Safety Equip. Corp., 1007 Washington Ave.
Salt Lake City, Utah--Allied Distributing Corp., 3½ E. Broadway, P. O. Box 240
Salt Lake City 1, Utah--Kedman Co., 233 S. 5th West
Salt Lake City 1, Utah--Western Optical Co., 24 W. 2nd South, P. O. Box 308
Salinas, Calif. --Jenkel-Davidson Optical Co., 444 S. Main St.
Salisbury, Md. --Berks Optical Co., Inc., 613 N. Division St., P. O. Box 75
San Antonio, Tex. --Dietz-McLean Opt. Co., Box 1517
San Francisco 19, Calif. --Jenkel-Davidson Optical Co., 366 Post St.
San Francisco, Calif. --Jenkel-Davidson Optical Co., 450 Sutter St.
San Francisco, Calif. --Jenkel-Davidson Optical Co., 225 Medico-Dental Bldg., 476 Post St.
San Jose, Calif. --Jenkel-Davidson Optical Co., 210 Meridan Rd.
San Jose, Calif. --Jenkel-Davidson Optical Co., Medico-Dental Bldg., 231 E. Santa Clara
San Jose, Calif. --Lynn Opt. Laboratory, 67 W. San Antonio St.
San Mateo, Calif. --Jenkel-Davidson Optical Co., 173 E. Fourth St.
San Rafael, Calif. --Jenkel-Davidson Optical Co., 1014 B St.
Schenectady, N. Y. --Kaiser-Fowler Opt. Co., Inc., 152 Barrett St.,
Seattle, Wash. --Safety & Supply Co., 115 Blanchard St.
South Bend, Ind. --White-Haines Optical Co., 327-29 Sherland Bldg., P. O. Box 268
Springfield, Ill. --White-Haines Optical Co., 524 E. Capitol Ave., P. O. Box 78
Springfield, Ohio--White-Haines Optical Co., 530 1st Nat'l Bank & Trust Bldg., Main & Fountain Sts.
Stevens Point, Wis. --N. P. Benson Opt. Co., Inc., 10 Frost Block, 459½ Main St., P. O. Box 321
Stockton, Calif. --Jenkel-Davidson Optical Co., 238 N. Sutter St.
Sunbury, Pa. --Philadelphia Opt. Co., 370 Market St., P. O. Box 608
Superior, Wis. --N. P. Benson Opt. Co., Inc., 204 Board of Trade Bldg.
Terre Haute, Ind. --White-Haines Optical Co., 5th Floor Trubune Bldg.
Thief River Falls, Minn. --N. P. Benson Opt. Co., Inc., Hartz Bldg., P. O. Box 385
Toledo 3, Ohio--White-Haines Optical Co., 903 Madison Ave., P. O. Box 1436
Twin Falls, Idaho--Western Optical Co., 154 Main Ave., North, P. O. Box 1029
Uniontown, Pa. --Berks Optical Co., Inc., 70 Morgantown St., P. O. Box 1028
Vallejo, Calif. --Jenkel-Davidson Optical Co., 1729 Sonoma Blvd.
Vineland, N. J. --Vineland Optical Co., 603 Landes Ave.
Washington, Pa. --White-Haines Optical Co., 928 Washington Union Trust Bldg.
Waterbury 20, Conn. --Connecticut Optical Co., 108 Bank St., P. O. Box 572
Wausau, Wis. --N. P. Benson Opt. Co., Inc., 502 1st Amer. State Bank Bldg., P. O. Box 778
Wheeling, W. Va. --White-Haines Optical Co., 611 Union Central Bldg., P. O. Box 229
Williamsport, Pa. --Freeman Optical Co., Inc., P. O. Box 176, 207 Williamsport, Pa. --Winchester Opt. Co., Inc., 13 W. Third St.
Williston, N. D. --N. P. Benson Opt. Co., Inc., Burgenhager Bldg., So. Main St.
Wilmington, N. C. --City Optical Co., 257 N. Front St., P. O. Box 900
Winona, Minn. --N. P. Benson Opt. Co., Inc., 100 Exchange Bldg.
Youngstown 3, Ohio--White-Haines Optical Co., 210 Dollar Bk. Bldg. P. O. Box 1385
Zanesville, Ohio--White-Haines Optical Co., 104 Lind Arcade, N. Fifth St., P. O. Box 230

BEACON FALLS RUBBER FOOTWEAR
Beacon Falls, Conn.
See ad page 182.

Branch Offices:

Minneapolis, Minn. --Highway 100, Cedar Lake Rd., St. Louis Park

BEAN, JOHN, DIV.
Industrial Sales Dept.
Food Machinery & Chemical Corp.
1305 S. Cedar St., P. O. Box 9490, Lansing 4, Mich.

Branch Offices:

San Jose 3, Calif. --1115 Coleman Ave., Box 145

Distributors:

Appleton, Wis. --Crane Engineering Sales, Inc., 1110 W. Wisconsin Ave.
Baltimore 1, Md. --Tate Engineering Inc., 516 S. Eutaw St.
Birmingham 12, Ala. --Associated Engineers, 3716 Third Ave., S.
Brookhaven, Miss. --W. L. Sommer Co., Inc., Box 2
Buffalo 10, N. Y. --Neal Root & Co., 64 Peabody St.
Carmi, Ill. --American Pump & Supply Co., 107 E. Main
Charlotte, N. C. --Brown & Morrison, P. O. Box 4297, 1900 E. 7th St.
Charleston 23, W. Va. --Cross Pump & Equip. Co., Box 889
Charleston, S. C. --Southeastern Supply Inc., P. O. Box 668
Chicago 5, Ill. --Thomas Pump Co., 407 S. Dearborn
Cincinnati 2, Ohio--White Industrial Sales & Equip., 140 W. 6th St.
Cleveland 20, Ohio--Chemical Pump & Equip. of Cleveland, 2000 Lee Rd.
Dallas 22, Tex. --Briggs-Weaver Machinery Co., 5000 Hines Blvd.
Decatur, Ga. --Murphy Equip. Co., 1314 E. Ponce DeLeon Ave.
Des Moines, Iowa--Donald Corp., 313 E. Seventh St.
Fairfield, Ill. --American Pump & Supply Co., 105 S. W. 6th St.
Harper Woods 36, Mich. --McBride Industrial Equip. Co., 21227 Manchester Blvd.
Haverford, Pa. --Warner Vaughan Co., 17 Station Rd.
Houston 21, Tex. --M. N. Dannenbaum Co., Box 14496, 2421 S. Wayside
Indianapolis 2, Ind. --Laidlaw Co., 11 W. 17th St.
Jacksonville, Fla. --Wallace Equip. Co., Foot of West Adams St.
Jersey City, N. J. --Chemical Pump & Equip. Corp., 81 Exchange Pl.
Jersey City, N. J. --Mooney Brothers Corp., 195 Paterson Ave.
Kalamazoo, Mich. --J. C. Krum Co., Box 2166
Knoxville 21, Tenn. --Boiler Supply Co., Inc., 1628 Island Home Ave. S. E.
Louisville 2, Ky. --Andriot-Davidson, 423 Starks Bldg.
McAllen, Tex. --McAllen Pipe & Supply Co., Box 1600
Miami, Fla. --B & H Distributors, Box 6, Edison Center Sta.
Milwaukee 8, Wis. --A. A. Anderson & Co., 3809 W. Vliet St.
Mobile, Ala. --Walter Kidde Sales & Service, 651 Pillans St.
Mt. Vernon, Ill. --American Pump & Supply Co., 1506 Broadway
Nashville, Tenn. --Boiler Supply Co., Inc., 490 Craighead Ave.
New Orleans, La. --Mooney Equip. Co., 2704 St. Claude Ave.
Omaha, Neb. --Interstate Machinery & Supply, 1006-10 Douglas St.
Peoria, Ill. --Paul J. Hagerty Equip. Co., 800 S. W. Adams St.
Pittsburgh 3, Pa. --Harris Pump & Supply Co., Brady & Sidney Sts.
Richmond 24, Va. --Tate Engineering, Inc., 13 W. 14th St.
Roanoke, Va. --Tate Engineering, Inc., 119 Carlton Terrace Bldg.
St. Louis, Mo. --William Roehl, Inc., 4968 Manchester St.
Shreveport, La. --W. L. Sommer Co., Inc., 419 Lake St., Box 82
Somerville 43, Mass. --Hayes Pump & Mach. Co., 100 Vine St.
Tinsley, Miss. --W. L. Sommer Co., Inc., Box 145
West Norfolk, Va. --Tate Engineering

Moncton, N. B., Canada--Consolidated Engines & Mach., Ltd., Box 848 5645 Pare St.
Mount Royal, Que., Canada--Consolidated Engines & Mach., Ltd.,
New Toronto, Ont., Canada--Consolidated Engines & Mach., Ltd., 14th & Birmingham Sts.

BEARFOOT SOLE CO., INC.
1st & Water Sts., Wadsworth, Ohio
See ad page 175.

BEAVER-ADVANCE CORPORATION
P. O. Box 792, Ellwood City, Pa.

Distributors:

Albany, Ga. --Herts Equip. Co., 300 S. Slappey Dr.
Anchorage, Alaska--Advance Scaffold of Alaska, Inc., 1912 Post Road
Ardmore Station, Lewisville Rd.
Atlanta 18, Ga. --R. S. Armstrong & Bros. Co., 676 Marietta St., N. W.
Augusta, Ga. --W. E. Raines Co., 14 7th St.
Binghamton, N. Y. --Binghamton Service & Painting Co., 2 Jackson St.
Boise, Idaho--Carl Burt Equip. Co., 506 N. 27th St.
Bristol, Va. --Bristol Steel & Iron Works, Inc.
Brookfield, Ill. --Riverside Sales Contr. Equip., Inc., 9116 Ogden Ave.
Buffalo, N. Y. --Great Arrow Equip. Co, 85 Great Arrow Ave.
Charleston, S. C. --Cameron & Barkley, Box 906, 160 Meeting St.
Cleveland 34, O. --Metro Equipment Corp., 4100 Brookpark Rd.
Columbus 22, O. --Lorenz Equip. Co., 5407 W. Rich St.
Concord, N. H. --E. L. Wyman, P. O. Box 283
Corona, L. I. 68, N. Y. --Corona Equip. Co., 50--02 98th St.
Danville, Ky. --Central Supply & Equip. Co., Inc., Box 392 Perryville
Dayton 2, O. --Krantz Equip. Co., 12 State St.
Decatur, Ill. --Hubbard, C. C. Machinery Co., 986 Eldorado St.
Denver, Colo. --K. C. Construction Co., 1895 Bryant St.
Englewood, N. J. --Contractors Supply Corp. of N. J., 410 S. Dean St.
Englewood, N. J. --United Hoisting Co., 5 W. Sheffield Ave.
Fargo, N. D. --Sweeney Brothers Tractor Co., 1622 Main Ave.
Fort Wayne 7, Ind. --Stockberger Machinery, Inc., 630 High St.
Forty Fort, Pa. --Yarrish Equip. Co., Inc., 2001 Wyoming Ave., Rt. 11
Glendale, Calif. --Phetieplace Scaffolding Co., 6026 San Fernando Rd.
Great Falls, Mont. --Carl Weissman & Sons, 300 Third Ave. S.
Green Bay, Wis. --Lindner Equip. Co., 1326 Velp Ave.
Greensboro, N. C. --Henry Waltz Co., Box 3445, 1319 Headquarters Dr.

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SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Hagerstown, Md. –Hagerstown Equip. Co., Maryland Ave. & Memorial W. 4th St.
Illed.
Harrisburg, Pa. –Highway Equip. & Supply Co., 5100 Paxton St., (Hershey Rd.)
Honolulu, Hawaii–Hawaiian Supply Co., Ltd., 351 Seaside Ave.
Honolulu 10, Hawaii–Islands Welding & Supply Co., Ltd., Box 94
Houston 21, Texas–E. L. Lester & Co., 5050 Holmes Rd.
Idaho Falls, Idaho–M. A. Carlson Equip. Co., Beaches Corner, Rt. #1
Indianapolis, Ind. –Seastrom, Inc., 2351 Kentucky Ave.
Kalamazoo, Mich. –Fader Equip. Co., 2203 E. Michigan Ave.
Little Rock, Ark. –Arkansas Equip. Co., Inc., 204 River Rd.
Louisville, Ky. –Central Supply & Equip Co., Inc., 4606 Schuff Ave.
Macon, Ga. –Bibb Steel & Supply Co., 4105 Broadway, Box 2068
Mansfield, O. –Lorenz Equip. Co., 408 Barnes Ave.
Memphis 18, Tenn. –Carey Equip. Co., Box 7116, 3531 Lamar
Miami, Fla. –Advance Contr. Equip., Inc., 2545 N. W. 38th St.
Milwaukee 13, Wis. –Anderson Equip. &Supply Co., 8915 Bluemound
Mobile 9, Ala. –Smith-Kelly Supply Co., Inc., Royal & Charleston Sts.
New Castle, Pa. –Bethel Builders Equip. Co., 1901 New Butler Rd., Rt. 422 East
New Orleans 9, La. –Woodward Wight & Co., Ltd., Box 370, 451 Howard Ave.
New York 4, N. Y. –Allbro Equip. Co., Inc., Rm. 1547, 26 Broadway
Norfolk 6, Va–Virginia Rental & Supply Corp., 335 Emmett Place
Old Washington, O. –Southeastern Equipment Co.
Orlando, Fla. –Garber's Scaf. & Rental Service, 1330 Wilfred Dr.
Panama City, Fla. –Panama Machinery & Sup. Co., 200 E. Beach Dr.
Paramus, N. J. –Advance Equip. Corp., W. 41 Ridgewood Ave.
Peoria, Ill. –Illinois Contr. Mach. Inc., 2306 Glen Ave. 'W'
Philadelphia 40, Pa. –Advance Scaffold Corp., 1111 W. Erie Ave.
Phoenix, Ariz. –Building Specialties Sup. Co., 3026 N. 16th St.
Pittsburgh 3, Pa. –Linco Supply Corp., Parkway West
Portland, Ore. –Allied Steel Scaffolding Co, 2300 N. W. 30th Ave.
Redwood City, Calif. –Advance Scaffold, Inc., 1115 Chestnut St.
Reno, Nev. –Martin Iron Works, 530 E. 4th St.
Richmond, Va. –Advance Steel Scaffolding Co., 1901 Hamilton St.
Rochester 15, N. Y. –Keystone Builders Supply Co., Inc., 85 Palm St.
Rockford, Ill. –A & E Equip. Co., 216 N. Water St.
St. Louis 24, Mo. –Cummings, McGowan & West, Inc., 9100 Olive St.
St. Paul, Minn. –Advance Shoring Co., 542 N. Prior Ave.
St. Petersburg, Fla. –Pinellas Lumber Co., 1400 Central St.
Stuart, Fla. –G. N. Crawford Co.
San Diego 1, Calif. –C. S. Goodale Co., 843 India
Santa Barbara, Calif. –Pittsburgh Plate Glass Co., 11 W. Figueroa St.
Seattle 4, Wash. –Northwest Scaffold & Equip. Co., 3636 Marginal Way
South Bend, Ind. –Stockberger Machinery, Inc., 308 S. Olive St.
Southfield, Mich. –Construction Supply & Rental Corp., 21740 W. Eight Mile Rd.
Syracuse 8, N. Y. –Safety Advance Steel Scaffold Co., Box 24, N. S. Sta., 921 N. State St.
Utica, N. Y. –McQuade & Bannigan, 829 Noyes St.
Washington, D. C. –Eckington Scaffolding Co., 657'A' St., S. E.
W. Sacramento, Calif. –Jomaco Scaffolding, Inc., 3208 W. Capitol Ave.
Winston-Salem, N. C. –State Construction Equipment Co., Box 5342
Yuma, Ariz. –Mohawk Wholesale Equip. Co., 301 First St.

BELTONE HEARING AID CO.
2900 W. 36th St., Chicago 32, Ill.

BENSON & ASSOCIATES
Box 7542, Chicago 80, Ill.
**See ad page 92.

BERYLLIUM CORPORATION, THE
P. O. Box 1462, Reading, Pennsylvania
**See ad page 273.

Distributors:

Akron, Ohio–Automotive Supply & Equip. Co., 276-278 Water St.
Albany, N. Y. –Sager-Spuck Supply Co., Inc., 360 Broadway
Amarillo, Texas–Clowe & Cowan, Inc.
Atlanta 2, Ga. –J. M. Tull Metal & Supply Co., Inc., 285 Marietta St.
Baltimore 2, Md. –John Maiers Sons, Co., 153 N. Gay St.
Baton Rouge, La. –Oliver H. Van Horn Co., Inc., 1200 Neosho St.
Beaumont, Texas–Briggs-Weaver Machinery Co., P. O. Box 551
Birmingham 4, Ala. –Safety Engineering & Supply Co., 617 N. 10th St.
Boston 10, Mass. –General Equip. Corp., 261 Franklin St.
Buffalo 23, N. Y. –Elwood Corp., 2180 Elmwood Ave.
Camden, N. J. –Antrim Hardware Co., 1514 Federal St.
Charleston 30, W. Va. –A & I Supply Co., 614 Virginia St., W.
Charlotte 1, N. C. –Henry Walke Co., 1310 S. Tryon St.
Chicago 6, Ill. –Samuel Harris & Co., 114-116 N. Clinton St.
Chicago 39, Ill. –Universal Safety Equip. Co., 5115 W. Diversey Ave.
Cincinnati 6, Ohio–Scallan Supply Co., Inc., 2337 Gilbert Ave.
Cleveland 14, Ohio–Williams & Co., Inc., 3700 Perkins Ave.
Dallas, Texas–Briggs-Weaver Machinery Co., 5000 Hines Blvd.
East Hartford 8, Conn. –Kawie Tool Supply Co., 676 Tolland St.
Farmingdale, L. I., N. Y. –Paramount Tool Mfg. Corp., 765 Fulton St.
Flint, Mich. –Gransden-Hall & Co., Walnut & Poplar Sts.
Houston 12, Texas–Texas Marine & Industrial Supply Co., 8106 Harrisburg Blvd.
Honolulu 13, Hawaii–Chapson Brothers, 863 Halekauwila St.
Houston 13, Texas–Wessendorff, Nelms & Co., Inc., 5535 Harvey Wilson Drive
Indianapolis 3, Ind. –Midwest Fire and Safety Equip. Co., Inc., 1605 Prospect St.
Indianapolis 1, Ind. –Safety Corp., 3740 E. Michigan St.
Jacksonville 1, Fla. –Georgia Supply Co., 821 E. Bay St.
Kalamazoo, Mich. –Safety Services, Inc., 1903 W. Main St.
Kansas City 8, Mo. –Forslund Pump & Mach. Corp., 1717 Main St.
Longview, Texas–Baxter Sales Co., P. O. Box 171
Los Angeles 16, Calif. –E. Jordan Brookes Co., Inc., 6601 Telegraph Rd.
Los Angeles, Calif. –Garrett Supply Co., 3844 S. Santa Fe Ave.
Louisville 2, Ky. –Orr Safety Equip. Co., 300 E. Main St.
Lutherville, Md. –R. J. Nicholson Co., Falls Rd. nr. Seminary Ave.
Memphis 2, Tenn. –Clement Safety Equip. Inc., 720 S. Third St.
Miami Springs, Fla. –Aero Hardware, Inc., 4301 N. W. 36th St.
Mobile, Ala. –Oliver H. Van Horn Co., Inc., 111 Beauregard Ave.
New Orleans 1, La. –Oliver H. Van Horn Co., Inc., 1742 St. Charles Ave.
Newark 5, N. J. –J. Heller & Sons, 149 Ferry St.
New York 18, N. Y. –Arsco Mfg. & Sales Corp., 451 10th Ave.
New York City 4, N. Y. –Durkee Co., Inc., 29 South St.
New York City 7, N. Y. –Harold Dessau Inc., 25 Murray St.
New York 13, N. Y. –Toppling Bros., 199 Varick St.
Norfolk, Va. –Henry Walke Co., 912 W. 21st St.
Norfolk 10, Va. –Poltz Brothers, Inc., 200 W. Water St.
Orange, N. J. –Inco Co., 400 S. Jefferson St.
Peoria, Ill. –Couch & Heyle, 1016 S. Adams St.
Philadelphia 43, Pa. –Boyd Supply Co., 56th & Baltimore Ave.
Philadelphia 35, Pa. –A. W. Pendergast Safety Equip. Co., 6913 Tulip St.
Pittsburgh 33, Pa. –Williams & Co., 901 Pennsylvania Ave.
Richmond, Va. –Virginia Tool & Equip. Corp., 1301 W. Main St.
Rocky Mount, N. C. –Carolina Machinery & Supply Co., Inc., P. O. Box 1178
St. Louis 8, Mo. –B. C. MacDonald & Co., 3829 W. Pine Blvd.
St. Louis 3, Mo. –Safety Inc., 2608 Olive St.
St. Paul 4, Minn. –Continental Safety Equip. Co., Inc., 1551 Selby Ave.
Salt Lake City, Utah–Metals Supply Co., Inc., 131 Social Hall Ave.
San Diego, Calif. –G. S. Parsons Co., 3211 India St.
San Francisco 11, Calif. –Marine & Ship Supply, 390 Jefferson St.
San Francisco 3, Calif. –C. W. Marwedel, 1235 Mission St.
Seattle 4, Wash. –Campbell Industrial Supply Co., 3433 Airport Way
Shreveport, La. –Harris Frederic & Co., Inc., 100 Edwards St.
Syracuse 1, N. Y. –Onondaga Supply Co., Inc., 344 W. Genesee St.
Warren, Mich. –Chas. A. Strelinger Co., 31855 Van Dyke
Washington 2, D. C. –J. H. Elliott Co., 2101 New York Ave., N. E.
West Hartford 10, Conn. –Industrial Safety Supply Co., Inc., 574 New Park Ave.
Wilmington, Del. –Hudson Supply Co., 117 Market St.

Kitchener, Ont., Canada–C. N. Weber, Ltd.
Montreal, Que., Canada–J. Pascal Hardware Co., Ltd., 301 Craig St., W.
Toronto 10, Ont., Canada–Levitt-Safety Ltd., 747 Vaughan Rd.
Toronto 4, Ont., Canada–Mine Safety Appliances Co. of Canada, Ltd., 500 MacPherson Ave.
Vancouver 4, B. C., Canada–Fleck Brothers, Ltd., 110 Alexander St.

BETHLEHEM STEEL CO.
Bethlehem, Pa.
**See ad page 203.

BLACK, SIVALLS & BRYSON, INCORPORATED
7500 E. 12th St., Kansas City 26, Missouri

Branch Offices:

Buffalo, N. Y. –920 Niagara Falls Blvd.
Chicago, Ill. –221 N. LaSalle St.
Corpus Christi, Texas–814 Wilson Bldg.
Dallas, Texas–1405 Texaco Bldg.
Detroit 2, Mich. –610 Stephenson Bldg., 6560 Cass Ave.
Denver, Colo. –434 Continental Oil Bldg.
Houston, Texas–11515 S. Main St.
Los Angeles, Calif. –759 Highland Ave.
New Orleans, La. –307 Civic Center Bldg.
New York, N. Y. –48 W. 48th St., Rm. 602
Odessa, Texas–E. Highway 80
Oklahoma City, Okla. –2131 Westwood Blvd.
San Francisco, Calif. –1485 Bay Shore Blvd.
Tulsa, Okla. –302 N. Cincinnati
Wayne, Pa. –123 W. Lancaster

Representatives:

Lakeland, Florida–Process Equipment & Engineering Co., 2440 Jonila Avenue
Newton, Ohio–The Walling Co., 121 W. 3rd St.
Omaha, Nebraska–The Walling Co., 1514 Davenport
Portland, Oregon–Martigs, Inc., 5741 N. E. Glisan Street

Vancouver 10, B. C. –General Equipment Limited, 224 West 5th Ave.

BLACKMER PUMP CO.
1809 Century Ave., S. W., Grand Rapids 9, Mich.

Branch Offices:

Atlanta 6, Ga. –1564 LaVista Rd., N. E.
Chicago 5, Ill. –407 S. Dearborn St.
Columbus, O. –4049 Beechbank Rd.
Dallas 6, Texas–5523 Dyer St.
New York, N. Y. –441 Lexington Ave.
San Francisco, Calif. –605 Third St.

BLONDER-TONGUE LABORATORIES, INCORPORATED
9 Alling Street, Newark 2, New Jersey

Representatives:

Albuquerque, N. Y. –5206 Constitution Ave., N. E.
Chattanooga, Tenn. –413 Dome Bldg.
Chicago, Illinois–5841 W. Montrose Ave.
Dallas, Texas–4533 N. Central Expressway
Denver, Colorado–888 S. Lipan St.
Detroit, Mich. –7351 Gratiot Ave.
Fort Wayne, Indiana–Butler Court
Los Angeles, Calif. –1217 Venice Blvd.
Miami, Florida–618 N. E. 78th St.
Minneapolis, Minn. –12 E. 25th St.
New York, N. Y. –458 Broadway
St. Louis, Mo. –4356 Duncan Ave.
San Francisco, Calif. –165 Eleventh St.
Seattle, Washington–222 First Ave. N.
Seituate, Mass. –291 First Parish Rd.
Tuckahoe, N. Y. –76 Main St.
Worthington, Ohio–Box 212

Distributors:

Albuquerque, N. M. –Hyde Electronics, 5205 Constitution Ave., N. E.
Anniston, Ala. –Radio Dist. & Supply Co., 125 W. 10th St.
Atlanta, Georgia–Specialty Dist. Co., 763 Juniper St., N. E.
Augusta, Georgia–Specialty Dist. Co., 1514 15th St.
Baltimore, Md. –Baltimore Sound Engr., 106 West North Ave.
Benton, Ill. –Lampley Radio Co., 425 E. Church St.
Billings, Montana–Television Service & Supply, 2305-07 Montana Ave.
Boston, Mass. –The Louis Herman Co., 885 Boylston St.
Bridgeport, Conn. –Westconn Electronic Inc., 195 Colorado Ave.
Buffalo, N. Y. –Radio Equipment Corp., 147 Genesee St.
Canton, Ohio–George F. Ebel Co., 317 Cleveland Ave. N. W.
Charleston, W. Va. –Chemcity Electronics, 1637 Fourth Ave.
Chattanooga, Tenn. –Jesse P. Johnson Co., 413 Dome Bldg.
Chattanooga, Tenn. –Specialty Distr. Co., 135 Market St.
Chicago, Ill. –Admiral Corp., 3800 Cortland St.
Chicago, Ill. –I. J. Kayle & Assoc., 6116 No. Lincoln Ave.
Chicago, Ill. –Felleisen Assoc., 5841 W. Montrose Ave.
Cincinnati, Ohio–Industrial Communications & Sound, 3197 Linwood
Columbus, Ohio–Planned Music Inc., 595 E. Broad St.
Covington, Kentucky–American Sound Service, 675 W. 3rd St.
Dallas, Texas–John B. Guenther, 4533 N. Central Expressway
Dallas, Tex. –Sound Engineer, 4329 Belmont
Dayton, Ohio–Stotts-Friedman Co., 135 E. Second St.
Denver, Colo. –Hyde Electronics, 888 S. Lipan St.
Detroit, Mich. –Lawrence Laffena Co., 7351 Gratiot Ave.
Eugene, Oregon–United Radio Supply, 974 West 6th St.
Fort Lauderdale, Fla. –Coastal TV & Sound Distr., 123 W. Sunrise
Fort Wayne, Ind. –Hoemig Sales Co., Butler Court
Fort Worth, Texas–Clifford Herring Sound Equip., 1705 W. 7th St.
Gadsen, Ala. –Southeastern Radio Parts, 120 Chestnut St.
Hollywood, Calif. –Photo Research Corp., 837 N. Cahuega Blvd.
Houston 4, Tex. –Gulf Coast Electronics, 1110 Winburn St.
Indianapolis, Indiana–Brown Dist. Co., 3746 College St.
Jamestown, N. Y. –Johnson Radio & Elec. Supply, 119 Hunt Rd.
Knoxville, Tenn. –Chemcity Electronics Dist., 2211 Dutch Valley Rd.
Los Angeles, Calif. –American Electronic Supply, 567 S. Fairfax Ave.
Los Angeles, Calif. –Wedge Weber Co., 1217 Venice Blvd.
Louisville, Ky. –Arby Electronics Inc., 540 E. Gray St.
Macon, Georgia–Specialty Dist. Co., 539 Arch St.
McAllen, Texas–Audio Center, 1912 N. 10th
Miami, Fla. –William F. Hemminger, 618 N. E. 78th St.
Milwaukee, Wis. –Taylor Electric Co., 4080 N. Port Washington Rd.
Minneapolis, Minn. –E. W. Osman, 12 E. 25th St.
Monroe, Louisana–C & O Electric, 201 South Stanley
New Haven, Conn. –Community TV Systems, 354 Whalley Ave.
Newport, R. I. –N. F. Andrews Electronics Supply, 80 Broadway
New York, N. Y. –Morhan Exporting Corp., 458 Broadway
New York, N. Y. –Shamark Dist., 145 Hudson St.
No. Hollywood, Calif. –Commercial Electronics, 5303 Bakman Ave.
Palo Alto, Calif. –Zack Electronics, 525 High St.
New York, N. Y. –Morhan Exporting, 458 Broadway
Paterson, N. J. –Community Radio & Sound, 705 Market St.
Pensacola, Fla. –Thurow Dist., 99 South Alcaniz St.
Philadelphia, Pa. –General Sound & Elect. Serv., 10th & Tioga Sts.
Philadelphia, Pa. –Radio Broadcasting Co., Inquirer Bldg.
Pittsburgh, Pa. –Tydings Electronics, 3337 Penn Ave.
Rexdale, Ontario, Can. –Benco TV Assoc., 27 Taber Rd.
Richmond, Va. –W. A. Yoder Co., 714 Cleveland St.
Rochester, N. Y. –Rochester Radio Supply Co., 600 E. Main St.
Rochester, N. Y. –Video Engineering, 2412 East Ave.
St. Beloit, Ill. –D & S Electronics, 540 Black Hawk Blvd.
St. Louis, Mo. –Nroman W. Katherines & Co., 4356 Duncan Ave.
St. Petersburg, F a. –Thurow Dist., 330 19th St. So.
San Antonio, Tex. –Southwestern Radio & Sound, 1518 N. St. Mary's Ave.
San Bernardino, Calif. –Sampson Electronic Serv., 843 Colton Ave.
San Francisco, Calif. –Moulthrop & Hunter, 165 Eleventh St.
San Francisco, Calif. –Zack Electronics, 1424 Market St.
Scituate, Mass. –William A. Hendrickson, 291 First Parish Rd.
Seattle, Wash. –M. K. Widdekind Co., 222 First Ave.
Sturgeon, Wis. –Peterson Builders, 61 N. 2nd Ave.
Tampa, Fla. –Goddard Tampa, Inc., 601 So. Morgan St.
Tampa, Fla. –Thurow Dist., 121 South Water St.
Toledo, Ohio–Warren Radio, 1002 Adams St.
Tuscaloosa, Ala. –Signal Dist., 2124 7th St.
Tulsa, Okla. –S & S Radio Supply, 537 S. Kenosha St.
Wheeling, Ill. –Wyknoy Inc., 645 Wheeling Rd.
Wichita, Kansas–Interstate Electronic, 230 Ida
Tuckahoe, N. Y. –Land-C-Air Sales Co., 76 Main St.
Worthington, Ohio–Weller-Rahe Co., Box 212

BOBRICK DISPENSERS, INC.
1839 Blake Ave., Los Angeles 39, Calif.

Branch Offices:

Brooklyn 25, N. Y. –1214 Nostrand Ave.

Distributors:

Boston 10, Mass. –Seidler & Egdall, 281 Franklin St.
Chicago 9, Ill. –Hysan Products Co., 919 W. 38th St.
Montreal, P. Q. Canada–Wyant and Co. 2125 Madison
Oakland, Calif. –Wilwite Associates, 291 – 4th St.
Vancouver 9, B. C. –Anthony Foster and Sons, 1731 W. 4th Ave.

BOYER CAMPBELL DIV. WHITE SEWING MACHINE CO.
801 W. Baltimore St., Detroit 2, Mich.
**See ad page 123.

BRADLEY WASHFOUNTAIN CO.
2203 W. Michigan St., Milwaukee 1, Wisc.

BRADY CO., W. H.
727 W. Glendale Ave., Milwaukee 9, Wis.

Branch Offices:

Atlanta 5, Ga. –3224 Peachtree Rd. N. E.
Boston, Mass. –375 Moody St., Waltham 54
Chicago 34, Ill. –6965 W. Belmont Ave.
Cincinnati 39, O. –3533 Epley Rd.
Cleveland 21, Ohio–2111 S. Green Rd.
Dallas 6, Texas–4924 Greenville Ave.
Detroit, Mich. –210 S. Lafayette, Royal Oak
Hartford 3, Conn. –119 Ann St.
Los Angeles 13, Calif., –923 E. 3rd St.
Newark 2, N. J. –449 Broad St.
Philadelphia 40, Pa. –4401 Germantown Ave.
St. Louis 19, Mo. –519 Lee Ave.
San Francisco 3, Calif. –1246 Folsom St.
Washington, D. C. –2523 Wilson Blvd., Arlington 1, Va.

Brompton, Ont., Canada–Research Rd.

Distributors:

Akron 2, O. –Acme Safety Products Co., 387 Storer Ave.
Billings, Mont. –Big Horn Supply, Inc. 2120 Third Ave.
Boston 10, Mass. –General Equip. Corp., 261 Franklin St.
Bridgeport 1, Conn. –Bridgeport Industrial Products, Inc., 22 Cross St.
Buffalo 13, N. Y. –American Allsafe Co., Inc. 1245 Niagara St.
Chicago 39, Ill. –Universal Safety Equip. Co., 5115 W. Diversey
Cincinnati 25, O. –Orr Safety Equip. Co., 2853 Colerain Ave.
Cleveland, O. –Safety First Supply Co., 4251 W. 35th St.
Cleveland 13, O. –Strong, Carlisle & Hammond, 1392 W. 3rd St.
Dayton, O. –Dayton Safety Supply Co., 11 Longworth St.
Detroit 2, Mich. –Boyer Campbell Co., 6540 St. Antoine St.

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Houston, Texas—Guardian Safety Equip. Co., 200 Sandman
Indianapolis, Ind.—Orr Safety Equip. Co., 2431 E. Washington
Kansas City 16, Kan.—Zink Safety Equip. Co., 1401 Fairfax Traffic Way
Kansas City, Mo.—Safety Inc., 17½ E. 31st St.
Los Angeles 3, Calif.—E. D. Bullard Co., 6719 S. Figueroa St.
Louisville 10, Ky.—Orr Safety Equip. Co., 1551 S. 10th St.
Memphis, Tenn.—Clement Safety Equipment Inc., 720 S. 3rd St.
Mendon, N. Y.—Searjeant Metal Prods., Inc., Box 74
Milwaukee 19, Wis.—Universal Safety Equip. Co., 5237 W. Electric Ave.
Newark 4, N. J.—Safeguard Industrial Equip. Co., 271 Verona Ave.
N. Plainfield, N. J.—Approved Fire Protection Co., P. O. Box 527
Peoria, Ill.—Standard Industrial Prod. Co., 116 S. Garfield Ave.
Philadelphia, Pa.—Guardian Safety Equip. Co., 214-16 S. 45th St.
Philadelphia 33, Pa.—Industrial Products Co., 2820 N. 4th St.
Pittsburgh 19, Pa.—Safety First Supply Co., 425 Magee St.
Portland 14, Ore.—Sanderson Safety Supply Co., 616 S. E. Hawthorne
Saginaw, Mich.—National Safety Products Co., 116 N. Hamilton St.
St. Louis 3, Mo.—Safety Inc., 3230 Olive St.
St. Paul 4, Minn.—Continental Safety Equip. Co., 1551 Selby Ave.
Sausalito, Calif.—E. D. Bullard Co., 2680 Bridgeway
Syracuse, N. Y.—American Allsafe Co., Inc., 1224 Erie Blvd. E.
Toledo, O.—Acme Safety Products Co., 1823 Vermont Ave.
Toledo, O.—Safety First Supply Co., 858 W. Delaware Ave.
Tulsa 14, Okla.—Guardian Safety Equip. Co., 1742 S. Main St.
W. Hartford 10, Conn.—Industrial Safety Supply Co., 574 New Park Ave.

BRAY STUDIOS INC.
729 Seventh Ave., New York 19, N. Y.
**See ad page 286.

BRENTON EQUIPMENT CO.
374 Brannan St., San Francisco 7, Calif.

BRETT-GUARD CORP.
456 Nordhoff Place, Englewood, N. J.
**See ad page 226.

BRIDGEPORT INDUSTRIAL PRODUCTS, INC.
22 Cross St., Bridgeport 1, Conn.

BRIGHT STAR INDUSTRIES
600 Getty Ave., Clifton, N. J.

Branch Offices:

Atlanta, Ga.—171 Simpson St., N. W.
Dallas, Tex.—106 Express St.
Los Angeles, Calif.—1807 E. Olympic Blvd.
San Francisco, Calif.—1355 Market St.
Skokie, Ill.—4900 Main St.

Distributors:

Refer inquiries to Bright Star Industries, Clifton, N. J. for National Distributors.

BRODERICK & BASCOM ROPE CO.
4203 Union Blvd., St. Louis 15, Mo.

Branch Offices:

Atlanta 10, Ga.—680 Murphy Ave. S. W.
Houston 29, Tex.—8830 Market St. Rd.
Los Angeles 22, Calif.—3043 S. Tanager Ave.
Melrose Park, Ill.—2045 N. 15th Ave.
Metairie, La.—2800 Ridgelake Drive
Portland 9, Ore.—1518 N. W. Marshall St.
San Francisco, Calif.—44 Potrero Ave.
Seattle 8, Wash.—655 Edmunds St.
Teterboro, N. J.—270 North Street

BRONSON SHOE COMPANY
710 West Lake St., Minneapolis, Minn.

BROSSARD, LESTER L., CO.
540 N. Michigan Ave., Chicago 11, Ill.
**See ad pages 39 and 94.

Distributors:

Located in principal cities.

BROWNE, STEWART R., MANUFACTURING COMPANY, INC.
258 Broadway, New York 7, New York

Branch Offices:

Harvey, Ill.—15209 Turlington Avenue

Distributors:

Houston, Tex.—August F. Huge & Son, P. O. Box 12403
Los Angeles 3, Calif.—E. D. Bullard Co., 6719 So. Figueroa St.
Pittsburgh 6, Pa.—P. W. Newell Co., 6101 Penn Ave.
Sausalito, Calif.—E. D. Bullard Co., 2680 Bridgeway

BRULIN & CO., INC.
2939-45 Columbia Ave., Indianapolis 7, Ind.

Representatives:

Located in principal cities. For address of nearest representative, east of Rockies, write to above address; west of Rockies, write to 1793 12th, Oakland 7, Calif.

BRUNDEE CO., THE
48 Hale St., Cranford, N. J.

Distributors:

Newark 2, N. J.—Parr Mfg. Corp., 44 Austin St.

BUCKEYE FIRE DEPT. EQUIPMENT
125 Hollier Ave., Dayton 3, O.

Distributors:

Anderson, Ind.—Howe Fire Apparatus, 1402 W. 22nd St.
Atlanta, Ga.—American LaFrance, 181 Spring St.
Augusta, Ga.—W. E. Morris Equip., 314 Monument
Battle Creek, Mich.—American Fire Apparatus, P. O. Box 1024
Boston 34, Mass.—American-LaFrance, 28 Brighton Ave.
Boston 10, Mass.—Boston Coupling, 293 Congress St.
Chicago, Ill.—American LaFrance, 445 Lake Shore Drive
Chicago, Ill.—Bi-Lateral Fire Hose, 20 N. Wacker Dr.
Chicago, Ill.—W. S. Darley & Co., 2800 Washington Blvd.
College Pk., Md.—Glenn D. Cuthert, 9651 Baltimore Ave.
Columbus, Ohio—Seagrave Corp., 2000 S. High St.
Denver, Colo.—American LaFrance, 1741 Arapahoe St.
Denver 4, Colo.—Western Fire Supply Co., 1011 Larimer St.
Detroit 26, Mich.—Seco Safety Products, 1300 W. Fort St.
Dravosburg, Pa.—Arthur C. Page Assoc., 215 Fifth St.
Elmira, N. Y.—American LaFrance
Greensburg, Pa.—Advanced Fire Equip., P. O. Box 317
Hamden 14, Conn.—O. B. Maxwell Co., 62 Bagley Ave.
Hot Springs, Ark.—Sanders Fire Equip., 3109 Malvern
Logansport, Ind.—Universal Fire App., P. O. Box 187
Long Island City, N. Y.—American LaFrance, 32 38th Ave.
Los Angeles, Calif.—Halgrin Supply, 1355 S. Flower
Northport L. I., N. Y.—L. I. Fire Equip., P. O. Box 3034
Oakland, Calif.—L. N. Curtis, 3808 College Ave.
Old Greenwich, Conn.—Orville A. Sawyer, P. O. Box 73
Sacramento, Calif.—Capitol Fire Equip., P. O. Box 1775
San Francisco, Calif.—American LaFrance, 24 12th St.
Stratford, Conn.—Conn. Fire Equip., P. O. Box 156

BUELL ENGINEERING CO., INC.
125 William St., New York 38, N. Y.

Distributors:

Akron 9, Ohio—B. W. Rogers Co., 380 Water St., P. O. Box 1030
Atlanta, Ga.—E. L. Shuff & Assoc., Suite 122-124, 2130 Maple Dr., N. E.
Baltimore, Md.—Jobe & Co., 2807 Greenmount Ave.
Birmingham, Mich.—Young C. Smith & Co., 496 Pierce St.
Boston 9, Mass.—Ralph L. Morse, 79 Milk St.
Burlingame, Calif.—Wooldridge Co., 1209 Burlingame Ave.
Chicago 2, Ill.—D. H. Skeen & Co., 1 N. LaSalle St.
Chicago 5, Ill.—V. E. Winfield & Assoc., 407 S. Dearborn St.
Cincinnati 31, Ohio—Lazear Equip. Co., 1503 St. Clair Ave.
Columbus 12, Ohio—Lazear Equip. Co., 867 King Ave., Box 4493
Denver 11, Colo.—Contract Engr. Co., 1727 Boulder St.
Denver 14, Colo.—Patten Engr. Co., P. O. Box 1438, 1795 Sheridan
Fairfield, Conn.—S. F. Nininger & Co., 43 Puritan Rd.
Havertown, Pa.—Dom Indus. Equip. Co., 1262 Chester Pike
Houston 2, Tex.—Meyer F. Smith Co., 2314 S. Main St.
Houston 19, Tex.—Whelan-May Co., P. O. Box 13291
Indianapolis 20, Ind.—M. S. Nelson, 6216 Carrollton Ave.
Kansas City 12, Mo.—Midwestern Pwr. Equip. Co., 1214 W. 47th St.
Los Angeles 5, Calif.—Allied Industrial Engrg., 3923 W. Sixth St.
Los Angeles 5, Calif.—Woodridge Co., 422 South West Ave.
Memphis 3, Tenn.—Engineered Plant Equip., 166 Monroe Ave.
Milwaukee 9, Wis.—C. E. Meicher Co., 4770 N. 19th Place
Omaha, Neb.—The Walling Co., 1514 Davenport St.
Orchard Park, N. Y.—Seitz Equip. Co., 74 N. Buffalo St.
Philadelphia 3, Pa.—Stewart Miller Co., 605 Fox-Phil. Bldg.
Pittsburgh 19, Pa.—D. D. Foster Co., 2210 Koppers Bldg.
Pittsburgh 22, Pa.—Mann Engrg. Co., 805 Bessemer Bldg.
Portland 4, Ore.—Bumstead-Woolford Co., 421 S. W. Sixth Ave.
Richmond 19, Va.—Jobe & Co., 110 N. 8th St.
Seattle, Wash.—Bumstead-Woolford Co., 1411 Fourth Ave.
S. Charleston, W. Va.—D. D. Foster Co., 411 D St.
Rochester 1, N. Y.—Buckpitt & Co., P. O. Box 292

Brantford, Ont., Canada—Dust Control Svs. Ltd., 126 Bruce St.
Montreal 16, Que., Canada—SF Products Ltd., 940 Cote De Liesse Rd.
Vancouver 3, B. C., Canada—Bumstead-Woolford Ltd., 207 W. Hastings St.

BUFFALO FORGE COMPANY
490 Broadway, Buffalo 5, New York

Branch Offices:

Washington 5, D. C.—G. S. Frankel, 222 Woodward Bldg.

Sales Representatives:

Albany 4, N. Y.—R. B. Taylor, 966 Broadway
Albuquerque, N. M.—Hugh Munn, P. O. Box 131
Allentown, Pa.—Bert W. Whitman, 1436 Hamilton St.
Atlanta 3, Ga.—J. W. Rockwell, 305 Techwood Dr., N. W.
Austin, Tex.—Langhammer-Rummel Co., 2032 South Lamar
Baltimore 18, Md.—D. N. Robinson, 2514 Maryland Ave.
Birmingham 13, Ala.—J. H. Judd, P. O. Box 7614
Boston (Melrose) 76, Mass.—E. D. Johnson, 414 Main St.
Chicago 6, Ill.—Johnson & Heckel, 20 N. Wacker Dr.
Cincinnati 9, Ohio—J. W. Gibbs, 3047 Madison Rd.
Cleveland 15, Ohio—Sherman & Weager, Inc., 548 Hanna Bldg.
Columbus 12, Ohio—Sherman & Weager, Inc., 1372 Grandview Ave.
Corpus Christi, Tex.—Langhammer-Rummel Co., P. O. Box 1365
Dallas 1, Tex.—T. H. Anspacher Co., 615 Tower Petroleum Bldg.
Davenport, Iowa—D. C. Murphy Co., 305 Security Bldg.
Denver 3, Colo.—W. C. Griggs, 655 Broadway Bldg.
Des Moines 14, Iowa—D. C. Murphy Co., 840 Fifth Ave.
Detroit 16, Mich.—Coon DeVisser Co., 2050 W. Lafayette Blvd.
El Paso, Texas, Hugh Munn, 221 International Mdse. Mart Bldg.
Greensboro, N. C.—Stipp & Powell, Inc., 1802 Pembroke Rd., Box 9297
Greenville, S. C.—Stipp & Powell, Inc., 104 E. Stone Ave., Box 1796
Hartford, (W. Hartford), Conn.—George A. Holzworth, 15 Oakwood Ave.
Houston 6, Texas—John B. Freeman, 2419 South Blvd.
Indianapolis 4, Ind.—S. E. Fenstermaker & Co., 937 Architects & Builders Bldg.
Jacksonville, Fla.—H. L. McMurry Co., P. O. Box 2548
Kansas City 11, Mo.—Donald J. Seifert, V. F. W. Bldg., Broadway at 34th St.
Knoxville 2, Tennessee—C. F. Sexton, 702 Empire Bldg.
Little Rock, Arkansas—J. L. Brown, 217 Terminal Whse. Bldg.
Los Angeles 17, Calif.—Halladay & Knauff, 1127 Wilshire Blvd.
Louisville 2, Ky.—H. M. Lutes, 633 South Fifth St.
Memphis 6, Tennessee—Process & Power, Inc.—1565 Harbor Ave.
Miami 32, Fla.—Ousley & Assoc., 33 N. E. Sixth St.
Milwaukee 3, Wis.—G. M. Stevens, 744 North 4th St.
Minneapolis 2, Minn.—E. Floyd Bell, 2102 Foshay Tower
Nashville 4, Tenn.—James E. Hailey Co., 726 16th Ave. South
New Orleans 25, La.—Devlin Bros., 4424 Earhart Blvd.
New York 17, N. Y.—Johnson & Norman Fans & Pumps, Inc., 41 East 42nd Street
Newark, (East Orange) N. J.—George W. Knauff, 604 Central Ave.
Oklahoma City 6, Okla.—Process Equipment Co., 1824 N. Linwood Blvd.
Omaha 2, Neb.—Main Engineering Co., 523 Omaha Bldg. & Loan Bldg.
Philadelphia 2, Pa.—Davidson & Hunger, 220 S. 16th St.
Phoenix, Ariz.—J. E. Redmond Supply Co., 625 W. Madison St.
Pittsburgh 22, Pa.—W. D. Simpson, 345 Fourth Ave.
Portland 14, Oregon—E. S. Constant Co., 1614 S. E. 7th
Richmond 21, Va.—N. G. Husk, 3318 West Cary St.
Rochester 4, New York—R. O. Moyer, 532 Sibley Tower Bldg.
St. Louis 10, Mo.—J. W. Cooper, 2500 Hampton Ave.
Salt Lake City 4, Utah—Pace-Turpin Co., 726 South 3rd West
San Antonio 6, Tex.—Langhammer-Rummel Co., 300 Blum St.
San Francisco (S), Calif.—Richard Stites, 405 Grand Ave.
Seattle 99, Wash.—Arthur Forsyth Co., 2800 15th Ave., West
Spokane, Wash.—Arthur Forsyth Co., North 120 Division St.
Syracuse, N. Y.—E. W. Cahill, 317 State Tower Bldg.
Tampa, Fla.—H. L. McMurry & Co. of Tampa, 114 S. 12th St.
Toledo 2, Ohio—Carl Eyster, 1118 Madison Ave.
Tulsa 16, Okla.—Process Equipment Co., P. O. Box 5145, Donaldson Station

Edmonton, Alberta—R. S. Bennetts, 8717 96th Ave., Apt. A
Hamilton, Ontario—W. C. Goman, 291 Queenston Rd.
Kitchener, Ontario—W. L. Bulmer, Woodside Ave.
London, Ontario—W. H. Moulton, 430 Wellington St.
Montreal 16, Quebec—H. W. Rogers, 1255 Laird Blvd.
Ottawa, Ontario—H. N. Charles, 77 Metcalfe St.
Saint John, N. B.—Keith Brokerage, 244 Prince William St.
Sarnia, Ontario—C. L. G. Robinson, 203 North Vidal St.
Toronto 17, Ontario—A. M. Clark, 560 Bayview Ave.
Vancouver 10, B. C.—J. C. Thompson, 54 West 5th Ave.
Winnipeg 2, Manitoba—Nothart Engineering Sales Ltd., 4 Imperial Bank Bldg.

BUHRKE, R. H., CO.
1403 W. Congress Pkwy., Chicago 7, Ill.
**See ad page 172.

BULLARD, E. D., COMPANY
2680 Bridgeway, Sausalito, Calif.
**See ad page 105.

Branch Offices:

Chicago, Ill.—6835 W. Higgins Ave.
Los Angeles 3, Calif.—6719 S. Figueroa St.
Sausalito, Calif.—2680 Bridgeway
Westport, Conn.—11 Grist Mill Road

Distributors:

Albuquerque, N. M.—Central New Mexico Equip. Co., 9712 Edith Blvd. N. E.
Amarillo, Tex.—Radcliff Supply Co., P. O. Box 2725
Anchorage, Alaska—The Dalton Co., 132 'D' St.
Arlington 9, Va.—Government Sales Office, P. O. Box 9294-Rossiyn Sta.
Baltimore 3, Md.—Carey Machinery & Supply Co., Inc., 3501 Brehms
Baton Rouge 6, La.—Guardian Safety Equip. Co., 3615 Capitol Hgts.
Binghamton, N. Y.—Gebler Associates, Inc., 256 Front St.
Birmingham 4, Ala.—Industrial Safety Supply Co., 1727 Huntsville Rd.
Boise, Idaho—Intermountain Equip. Co., Broadway at Myrtle
Borger, Tex.—Radcliff Supply Co., 504 E. 10th St.
Boston 10, Mass.—Goodall Rubber Co., 354-358 Congress St.
Buffalo 12, N. Y.—Protective Equip. Supply Co., Inc., 1270 Broadway
Canton 8, Ohio—Safety First Supply Co., 2914 Clearview Ave., N. W.
Charleston 1, W. Va.—Safety First Supply Co., 1104 Quarrier St.
Chicago 39, Ill.—Universal Safety Equip. Co., 5115 W. Diversey Ave.
Cincinnati 18, Oh.—General Safety Co., 27 Andover Rd.
Cleveland, Ohio—Safety First Supply Co., 4251 W. 35th St.
Dallas 35, Tex.—Engineering Supply Co., 6000 Denton Drive
Dayton 2, Ohio—Dayton Safety Supply, 11 Longworth St.
Denver 7, Colo.—Goodall Rubber Co., 4861 E. 39th Ave.
Detroit 34, Mich.—Averill Equip. Co., 19225 Conant Ave.
Duluth 2, Minn.—W. P. & R. S. Mars Co., 322-324 W. Michigan St.
El Paso, Tex.—Mine & Smelter Supply Co., 1515 E. 11th Ave.
Fort Worth, Tex.—Engineering Supply Co.
Greensboro, N. C.—Rubber Products Co., Inc., 866 Huffman St.
Hibbing, Minn.—W. P. & R. S. Mars Co., P. O. Box 434
Hilo, Hawaii—Gaspro, Ltd., 525 Kalanianaole
Honolulu, Hawaii—Gaspro, Ltd., 2305 Dillingham Blvd.
Houston, Tex.—Guardian Safety Equip. Co., 200 Sandman St.
Kansas City 15, Kan.—Zink Safety Equip. Co., 1401 Fairfax Trfwy.
Knoxville, Tenn.—Safety Equip. Distr. Co., 830-832 Main Ave., S. W.
Louisville 2, Ky.—Robert L. Schmitt Co., 306 E. Main St.
Memphis 2, Tenn.—Clement Safety Equip., Inc., 720 S. Third St.
Milwaukee 19, Wis.—Universal Safety Equipment Co., 5237 W. Electric
Mobile 6, Ala.—Gulf Coast Marine Supply, Inc., 199 S. Royal St.
New Haven 5, Conn.—Abern Safety Equip. Corp., 2 Eld St.
Norfolk 10, Va.—Paxton Co., 1019 Main St.
Odessa, Tex.—Settle Safety Supply Co., 207 N. Amburgey
Oklahoma City 5, Okla.—Mid-Continent Transmission & Supply, Inc., 4 Northeast 27th St.
Omaha, Neb.—Continental Safety Equip. Co., Inc., 6715 Shamrock Rd.
Orange, N. J.—Ipco Safety Products Co., 400 S. Jefferson St.
Pampa, Tex.—Radcliff Supply Co., 112 E. Brown St.
Peoria, Ill.—Standard Industrial Products Co., 3527 W. Farmington Rd.
Philadelphia 33, Pa.—Industrial Products Co., 2820 N. Fourth St.
Phoenix, Ariz.—Garrett Supply Co., 2950 W. Thomas Rd.
Phoenix, Ariz.—Midwest Rubber & Supply Co. of Arizona, 327 E. Jefferson St.
Pineville, Ky.—The Delaware Powder Co.
Pittsburgh 19, Pa.—Safety First Supply Co., 425 Magee St.
Pocatello, Idaho—Intermountain Equip. Co., 210 W. 4th St.
Portland 14, Ore.—Sanderson Safety Supply Co., 935 S. E. Hawthorne
Richmond 3, Va.—Richmond Rubber Co., 7th & Leigh St.
Roanoke, Va.—The Wright, 2036 Laburnum Ave., S. W.
St. Louis 39, Mo.—Zink Safety Equip. Co., 7470 St. Charles Rock Rd.
St. Paul 4, Minn.—Continental Safety Equip., Inc., 1551 Selby Ave.
Salt Lake City 4, Utah—Goodall Rubber Co., 671 S. 2nd W.
San Antonio, Tex.—Hope Medical Supply Co., 821 Dallas-N. St. Mary's
Seattle 1, Wash.—Safety & Supply Co., 115 Blanchard St.
Spokane 2, Wash.—Safety & Supply Co., 219 N. Division St.
Tampa, Fla.—Safety Equip. Co. of Florida, 109 Hamilton St.
Toledo, Ohio—Safety First Supply Co., 858 W. Delaware Ave.
Tulsa 10, Okla.—Engineering Supply Co., 1124 E. 4th St.
W. Hartford 10, Conn.—Industrial Safety Supply Co., 574 New Park Ave.
Wheeling, W. Va.—Safety First Supply Co., 47 Garland Ave.
Wichita 14, Kan.—Mid-Continent Transmission & Supply, Inc., 2027 N. Broadway
Wolfeboro, N. H.—Hawkins Safety Equip. Co., Inc.

Belize, British Honduras—Belize Supply Co., P. O. Box 272

Continued on next page

Safety Products Sources

Bilboa, Spain—Ceplastic Compania de Plastics, S. A., Apartado 544
Calcutta, India—Industrial Gases, Ltd., P. O. Box 853
Caracas, Venezuela—Comanil C. A., Santo Tomas - Porvenir 70
Calgary, Alberta, Canada—Chidlow Fire Protection Equip., Ltd., 120 First Ave., East
Colon, R. Panama—Colon Import & Export Co., Ltd.
D. F. 7, Mexico—Equipos de Seguridad, S. A., Medellin 184, Desp. 301, 3rd Piso
Edmonton, Alberta, Canada—Soper Singleton Electric Co., Ltd., 10831 101st St.
Guatemala City, Guatemala—Equipos Mecanicos de Guatemala, S. A., 7A Avenida Prol. 1-40-60
Kingston, Jamaica, W. I. —Kingston Industrial Agencies Ltd., 381 Spanish Town Rd.
La Paz, Bolivia—Bolivian Oil & Mine Supply Co., Ltd., Av 16 de Julio 330, P. O. Box 2606
Lausanne, Switzerland—A. Bovey S. A., 43 Rue Cesar Roux
Lima, Peru—Distribuidora Interamericana S. A., P. O. Box 4217
Managua, Nicaragua—Casa Comercial McGregor, S. A., 3-A Calle S. E. N. 104
Manila, P. I. —Atlantic Gulf & Pacific Co. of Manila, Robert Dollar Bldg., Port Area, P. O. Box 626
Milano 845, Italy—Lupi and C., Via Fratti N. 27
Montreal 25, Que., Canada—Butler Optical Co., Ltd., 2160 Mountain St.
Montreal, Que., Canada—Consolidated Pool Supply, Ltd., 9510 Delorimier Ave.
Oslo, Norway—Maskin, A/S, Reviersstredet 3
Panama City, R. Panama—Geneva, S. A., Carretera Transistmica, Urbanization Los Angeles, P. O. Box 1781
Panama City, R. Panama—Guardia & Cia, S. A., Ave. J. Arosemena y Calle 29
Perstorp, Sweden—Skanska, Attikfabriken, A. B.
Regina, Saskatchewan, Canada—Mackay Morton, Ltd., 1174 Albert St.
San Jose, Costa Rica—Alberto Arce, S. A., Avenue 3, entre Calles 1 and 3, Apartado 296
San Juan 1, P. R. —Mayoll Distr. Co., P. O. Box 152
San Pedro Sula, Honduras—Federico Bahr & Cia, Apartado Postal #122
San Salvador, El Salvador—Jose J. Kalil & Cia, Calle Ruben Dario #924
Seven Islands, Que., Canada—Consolidated Pool Supply, Ltd.
Tegucigalpa, Honduras—Casa Comercial Mathews, Calle Real
Toronto 18, Ont., Canada—Bell Electricord & Safety, Ltd., 341 Bering Ave.
Traun b Linz, Austria—Willi Anger, O. H. G.
Vancouver 4, B. C., Canada—Fleck Bros., Ltd., 110 Alexander St.
Victoria, B. C., Canada—Fleck Bros., Ltd., 2020 Douglas St.
Winnipeg 2, Man., Canada—Mackay Morton, Ltd., 183 James Ave., E.

European Representative:

Zurich 8, Switzerland—Robert Ernst Associates Ltd., Seefeldstrasse 7

BURGESS-MANNING CO.
753 East Park Ave., Libertyville, Illinois
**See ad page 191.

BURT MANUFACTURING COMPANY, THE
44 E. South St., Akron 11, O.

Distributors:

Albuquerque, N. M. —Steel & Engineering Products Co., P. O. Box 8026, Sta. 'C', 5900 Domingo Rd. N. E.
Alexandria, Va. —Randall S. Stover, 3834 Mt. Vernon Ave.
Atlanta 5, Ga. —L. E. Murray, Northside Sta., Box 11603
Augusta, Ga. —Slusky Builders' Supplies, Inc., 1009 Broad St.
Bala Cynwyd, Pa. —Harry Mather, Inc., P. O. Box 308
Baltimore 11, Md. —Gathmann Industrial Corp., P. C. Box 4823
Billings, Mont. —Anderson Construction Products, P. O. Box 299
Birmingham, Ala. —Oscar M. Price, Jr., P. O. Box 707
Boston 9, Mass. —T. F. Fitzgerald, 31 Milk St.
Buffalo 13, N. Y. —Troup Engineering Co., 295 Auburn Ave.
Charleston, W. Va. —Thermal Equip. Co., 715 Richard St.
Charlotte, N. C. —Chet Adams Co., 823 Professional Bldg.
Chattanooga 2 Tenn. —Robbins & Bohr, 814 Hamilton Nat. Bank Bldg.
Chicago, 47, Ill. —G. W. Pipenhagen & Son, 2458 W. Diversey Ave.
Cincinnati 15, O. —The Queen City Wholesale Co., P. O. Box 12
Cleveland 13, O. —Wilson and Dolphin, Inc., 2168 W. 25th St.
Columbus 15, O. —McKeever Elect. Supply Co., 212 N. Grant Ave.
Cranford, N. J. —E. C. Hallock Constr. Specialties, Inc., 55 Winans
Dallas 4, Texas—Harold O. Knape & Co., 2615 Routh St.
Davenport, Ia. —D. C. Murphy Co., Inc., 305 Security Bldg.
Denver 2, Colo. —C. A. Crosta, Inc., 1901 Market St.
Des Moines 14, Ia. —D. C. Murphy Co., Inc. 840 — 5th Ave.
El Paso, Texas—Steel & Engineering Products Co., 1035 E. Side Rd.
Evansville 3, Ind. —Schlamp Bldg. Specialties Co., P. O. Box 516
Fargo, N. D. —Adams Inc., 6 North 13
Glendale, Calif. —Engineered Metals of S. Calif., 437 Fernando Ct.
Grand Rapids 4, Mich. —H & W Sales Co., 1451 Front Ave., N. W.
Greensboro, N. C. —Chet Adams Co., P. O. Box 3073
Holly Hill, Fla. —W. R. Newton Representatives Corp., 362 3rd St.
Houston 4, Texas—Harold O. Knape & Co., 3011 San Jacinto St.
Indianapolis 9, Ind. —Tanner & Co., 409 S. Pennsylvania St.
Jackson 6, Miss. —J. S. Lawson Co., P. O. Box 4825
Johnson City, Tenn. —Lancaster Assoc., John Sevier Hotel Bldg.
Kansas City 4, Kan. —B-D-R Engineering Corp., 1933 N. Tenth St.
Knoxville, Tenn. —Lancaster Associates, Andrew Johnson Hotel Bldg.
Little Rock, Ark. —Sales Asso., 124 River Rd., P. O. Box 3346
Louisville 4, Ky. —American Builders Supply Co., 1064 E. Chestnut
Memphis, Tenn. —Pidgeon-Thomas Iron Co., 107 East E. H. Crump Blvd.
Milwaukee 17, Wis. —Air Handling & Specialty Co., 117 W. Belle Ave.
New Orleans 24, La. —Joseph C. Ryan, 6431 Memphis St.
New York City 17, N. Y. —Yocum & Goode, Inc., 2531 Graybar Bldg. 420 Lexington Ave.
Norfolk 13, Va. —Chet Adams Co., 3329 Chesapeake Blvd.
Norwalk, Conn. —E. M. Tarnoff Co., Frost Bldg.
Oak Pk. 37, Mich. —Fontanesi & Kann Co., 10460 W. 9 Mile Rd.
Oklahoma City 4, Okla. —L. E. Acher, 1809 W. Main St.
Parkersburg, W. Va. —D. K. Becker, 1913 Foley Ave., Box 1604
Peoria, Ill. —Geo. B. Schneider Co., 3303 Prospect Rd.
Phoenix, Ariz. —Steel & Engineering Products Co., 221 E. Camelback
Pittsburgh 28, Pa. —Allied Materials Co., 300 Cedar Blvd.
Portland 18, Ore. —Marion Butler Co., 5435 N. Lagoon Ave.
Raleigh, N. C. —Chet Adams Co., P. O. Box 366, 210 Carolina Bldg.
Roanoke, Va. —A. L. Horwitz, Boxley Bldg.
Richmond 19, Va. —W. H. Slovall & Co., Inc., 303 S. 2nd St.
St. Louis 30, Mo. —E. L. Wyde Co., 1508 Parkway Dr.
St. Paul 1, Minn. —Meier Sales & Equip. Co., 396 Cedar St.
St. Petersburg, Fla. —Building Specialties, Inc., P. O. Box 10969
Salt Lake City 1, Utah—Pace-Turpin & Co., 726 S. 3rd West
San Antonio 9, Texas—Howard L. Keits, Transit Tower
San Francisco 11, Calif. —Samson Sales Co., 420 Market St.
Scranton 10, Pa. —Fred R. Evans Bldg. Mats., 312 Madison Ave.
Seattle 2, Wash. —Hal Fogman & Assoc., Inc., P. O. Box 9084
Shreveport, La. —Richard L. Johnson, Jr., P. O. Box 304
Syracuse 10, N. Y. —Earl R. Greeley, 145 Avondale Pl.
Toledo 7, O. —Wm. C. Turnbull Co., P. O. Box 44 Sta. C.
Tulsa 12, Okla. —Fred Colbert Co., 1546 S. Harvard
Watervliet, N. Y. —Joseph Y. Fowler, 205—8th Ave.
Wheeling, W. Va. —W. J. Thomas, Rm. 221, Wheeling Steel Bldg.

BY'S INC.
150 Hemlock St., San Francisco, Calif.

CALUMET STEEL CASTINGS CORP.
1638 Summer St., Hammond, Ind.
**See ad page 226.

CAMBRIDGE RUBBER COMPANY
Vul-Cork Sole Division
Blue Ridge Avenue, Taneytown, Maryland

CAMBRIDGE WIRE CLOTH COMPANY, THE
Cambridge, Maryland

Branch Offices:

Atlanta, Ga. —76 4th St., N. W.
Bellaire, Texas—5208 Willow Avenue
Chicago, Ill. —132 S. Michigan Ave.
Detroit 8, Mich. —2567 W. Grand Blvd.
Eastchester 7, N. Y. —429 White Plains Rd.
Kansas City, Mo. —4627 Wornall Rd.
Newark, Delaware—P. O. Box 208
Pittsburgh, Pa. —295 Beverly Road
San Francisco 11, Calif. —420 Market St.
Stoneham 80, Mass. —230 Main St.

CAMPBELL CHAIN CO.
Norway St., York, Pa.
**See ad page 204.

Branch Offices:

Chicago 6, Ill. —559 W. Fulton
Los Angeles, Calif. —2960 Leonis Blvd.
Medford, Mass. —322 Mystic Ave.
Portland 10, Ore. —3085 N. W. Front St.
Seattle, Wash. —6901 E. Marginal Way
Union City, Calif. —Plant, P. O. Box 336
West Burlington, Ia. —Plant, 215 N. Summer St.

CAMPRO PRODUCTS, INC.
P. O. Box 911, Canton 1, O.

CANFIELD OIL COMPANY
3216 East 55 Street, Cleveland 27, Ohio

Branch Offices:

Coraopolis, Pa. —419 Fourth Ave.
Detroit 4, Mich. —7720 West Chicago Blvd.
Jersey City 6, N. J. —173 Newkirk Ave.

CANISTEO SIGN & MFG. CO., INC.
11 Fourth St., Canisteo, N. Y.

Distributors:

Avoca, N. Y. —Robin W. Adair Co., Inc.
East Orange, N. J. —N. J. Safety Equip. Co., 299 Park Ave.

CANTON MANUFACTURING COMPANY, THE
2408 13th St. N. E., Canton 5, Ohio

CARDOX-DIV. OF CHEMETRON CORP.
840 N. Michigan Ave., Chicago 11, Ill.

Branch Offices:

In all principal cities

CAREY, PHILIP, MFG. CO.
320 S. Wayne Ave., Cincinnati 15, Ohio

District Sales Offices:

Alexandria, Va. —405 Swann Ave.
Atlanta 9, Ga. —251 Armour Dr.
Bellwood, Ill. —25th & Warren Ave.
Cambridge 38, Mass. —22 Moulton St.
Cleveland 35, O. —4515 W. 160th St.
Detroit 38, Mich. —14420 Livernois Ave.
Houston, Texas—1400 N. Post Oak Rd.
Indianapolis 21, Ind. —1432 Kentucky Ave.
Lockland 15, O. —316 S. Wayne Ave.
Memphis 7, Tenn. —1510 Orenda Rd.
Montreal 9, P. Q., Canada, 95 Stinson Blvd., Ville St. Laurent
Perth Amboy, N. J. —Smith St. & Victory Bridge
St. Louis 3, Mo. —307 N. Theresa Ave.
San Francisco 24, Calif. —2350 Ingalls St.
Seattle 4, Wash. —505 Dexter Horton Bldg.

CARHOFF CO.
11706 Kinsman Rd., Cleveland 20, O.

CARPENTER MFG. CO.
935 Gilman Square, Somerville 45, Mass.
**See ad page 255.

CARROLL PRESSED METAL, INC.
133 Dewey St., Worcester 10, Mass.

CASTLE ENGINEERING COMPANY
P. O. Box 35, Seneca Castle, New York

CELANESE CHEMICAL COMPANY
180 Madison Avenue, New York 16, N. Y.
After 7/1/61 - 522 Fifth Avenue

Branch Offices:

Atlanta 5, Ga. —3130 Maple Drive, N. E.
Charlotte, N. C. —P. O. Box 1414
Chestnut Hill 67, Mass. —824 Boylston St.
Chicago 48, Ill. —6050 West Touhy Ave.
Cleveland 15, Ohio—1422 Euclid Ave.
Houston 25, Tex. —1105 Prudential Bldg.
Los Angeles 5, Calif. —3460 Wilshire Blvd.
Palo Alto, Calif. —535 Middlefield Rd.
St. Louis 5, Mo. —200 S. Bemiston Ave.
Southfield, Mich. —17220 W. Eight Mile Rd.
Wilmington 3, Del. —1035 Philadelphia Pike

CENTRAL CITY MACHINE & TOOL CO.
P. O. Box 1018, Syracuse 1, N. Y.

Distributors:

Waterbury, Conn. —Direct Sales Co., 79 N. Main St.
Cleveland, O. —Brodhead-Garrett Co., 4560 E. 71st St.
Kalamazoo, Mich. —Safety Service, Inc., 1903 W. Main St.
New York 38, N. Y. —Patterson Brothers, 15 Park Row
Syracuse 3, N. Y. —C. H. Peters Assoc, Inc., 112 Dewitt St.
Winter Park, Fla. —C. H. Peters Assoc., Inc., 260 Spring Lane

CENTRAL SAFETY EQUIP. CO.
Elasticone Div.
6601 Marsden St., Philadelphia 35, Pa.

Distributors:

Chicago 39, Ill. —Universal Safety Equip. Co., 5115 W. Diversey
City of Industry, Calif. —Die Supply Div., E. W. Bliss Co., 13280 E.
Cleveland 11, O. —Strong Carlisle & Hammond Co., 11770 Berea Rd.
Detroit 2, Mich. —Boyer-Campbell Co., 801 W. Baltimore Temple Ave.
South Bend, Ind. —H. W. Hehl Co., 2909 S. Michigan

CHANCE CO., A. B.
210 N. Allen St., Centralia, Mo.

Branch Offices:

Birmingham 3, Ala. — 1616 Second Ave., S.
Burlingame, Calif. —1511 Adrian Rd.
Centralia, Mo. —210 N. Allen St.
Chicago 11, Ill. —549 E. Illinois St.
Dallas, Texas—1332 Crampton St.
Erie, Pa. —1408 W. 20th St.
Los Angeles 58, Calif. —4527 Loma Vista Ave.
New York 17, N. Y. —110 E. 42nd St., Rm. 1810
St. Paul 1, Minn. —390 Prince St.
Seattle 4, Wash. —1534 First Ave. So.

CHARLESTON RUBBER CO.
Stark Industrial Park, Charleston, S. C.
**See ad page 190.

Branch Offices:

Los Angeles 1, Calif. —7800 Compton Ave.

CHASE CHEMICAL CO.
1374 E. 170th St., Cleveland 10, Ohio

Distributors:

Rochester, N. Y. —Rochester Safety Equip. Co., 83 Howell St.
St. Louis, Mo. —Biesse Plng. & Engr. Co., 5107 Columbia Ave.

CHEM INDUSTRIAL CO., THE
3784 Ridge Rd., Brooklyn 9, O.

CHIC MAID KNITTING MILLS, INC.
701 Seneca St., Buffalo 10, N. Y.

CHICAGO EYE SHIELD COMPANY
2727 West Roscoe Street, Chicago 18, Illinois
**See ad inside back cover.

Distributors:

Atlanta, Ga. —Guardian Safety Equip. Co., 1091 Euclid Ave., N. E.
Baton Rouge, La. —Guardian Safety Equip. Co., 3615 Capitol Heights
Birmingham, Ala. —Safety Supplies & Service Co., P. O. Box 2984
Boston, Mass. —General Equip. Corp., 261 Franklin St.
Buffalo 23, N. Y. —Watson Co., 1362 Kenmore Ave.
Chicago 39, Ill. —Universal Safety Equip. Co., 5115 W. Diversey Ave.
Cincinnati 29, Ohio—Williams & Co., Inc., 3231 Fredonia Ave.
Cleveland 14, Ohio—Williams & Co., Inc., 3700 Perkins Ave.
Columbus 8, Ohio—Williams & Co., Inc., 900 Williams Ave.
Dallas 26, Texas—Guardian Safety Equip. Co., 6626 Maple Ave.
Denver 4, Colo. —Goodall Rubber Co., 1033 Santa Fe Dr.
Detroit, Mich. —Averill Equip. Co., 19225 Conant Ave.
Houston 7, Texas—Guardian Safety Equip. Co., 200 Sandman St.
Kansas City 8, Mo. —Safety Inc., 1716 E. 31st St.
Knoxville, Tenn. —Safety Equip. Distributing Co., 832 W. Main Ave.
Largo, Fla. —Car-Mad Equip. Co., 570 N. Indian Rocks Rd.
Linden, N. J. —Guardian Safety Equip. Co., 37 E. 21st Street
Los Angeles, Calif. —Guardian Safety Equip. Co., 7223 S. Main St.
Louisville 3, Ky. —Williams & Co., Inc., 1109 S. Preston St.
Milwaukee, Wis. —Universal Safety Equip. Co., 5233 Electric Ave.
Peoria, Ill. —Standard Industrial Prod. Co., 3527 W. Farmington Rd.
Philadelphia 4, Pa. —Guardian Safety Equip. Co., 214-216 S. 45th St.
Pittsburgh 33, Pa. —Williams & Co., Inc., 901 Pennsylvania Ave.
Richmond 30, Va. —Industrial Supply Corp., 1905 Westwood Ave.
St. Louis, Mo. —Safety, Inc., 3230 Olive St.
St. Paul, Minn. —Continental Safety Equip. Co., 1551 Selby Ave.
Salt Lake City 10, Utah—Universal Safety & Fire Equip., 727 S. W. Temple
Toledo, Ohio—Williams & Co., Inc., 946 Kane St.
Tucson, Ariz. —Grinnell Fire Fighting Equip. Co., 2521 N. Stone Ave.
Tulsa, Okla. —Guardian Safety Equip. Co., 1742 S. Main St.

Edmonton, Alberta, Canada—Soper Singleton Electric Co., 10831 101st St.

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Mexico 4, D. F. Mexico—Safety Equip. S. A. Medellin 184-301, 3ER PISO
Montreal, Que., Canada—Butler Optical Co., Ltd., 2160 Mountain St.
Regina, Saskatchewan, Canada—MacKay-Morton Limited Saskatchewan, 1174 Albert Street
Winnipeg 2, Man., Canada—Mackey-Morton Ltd., 183 James Ave. East

CHICAGO HARDWARE FOUNDRY CO.
2500 N. Commonwealth Ave., North Chicago, Ill.

CHISHOLM-MOORE HOIST DIVISION
Fremont Ave., Tonawanda, N. Y.

Branch Offices:

Berkeley, Calif.—2015 Center St.
Chicago, Ill.—6240 S. Kedzie Ave.
Cleveland, Ohio—3030 Euclid Ave.
Mountainside, N. J.—1111 Route 22

CLARK, DAVID, CO., INC.
360 Park Avenue, Worcester 2, Mass.
**See ad page 99.

Branch Offices:

El Monte, Calif.—2023 Central Ave.

Distributors:

Amarillo, Tex.—Radcliff Supply Co., 208 Polk St.
Atlanta, Ga.—Guardian Safety Equip. Co., 1091 Euclid Ave. N. E.
Avoca, N. Y.—Robin W. Adair Co., Inc., Box 248
Baton Rouge, La.—Guardian Safety, 3615 Capitol Heights
Boston 10, Mass.—General Equip. Corp., 361 Franklin St.
Bridgeport 1, Conn.—Bridgeport Industrial Products, 22 Cross St.
Brooklyn 17, N. Y.—Pulmosan Safety Equip. Corp., 644 Pacific St.
Brooklyn 12, N. Y.—Comet Safety 984 Winthrop St.
Buffalo 12, N. Y.—Protective Equip. Supply Co., 1270 Broadway
Buffalo 20, N. Y.—Steinwach's Safety Supply, 1573 S. Park Ave.
Casper, Wy.—Settle Safety Supply, 5010 Yes Ness Lane
Charleston, W. Va.—Industrial Safety Supply, 5518 McCokie Ave.
Cheyenne, Wy.—Western Safety Equip. Co., 1822 O'Neil St.
Cleveland, Ohio—Safety Clothing & Equip. Co., 1990 E. 69th St.
Cleveland 14, Ohio—Williams & Co., 3700 Perkins Ave.
Columbus, Ohio—Ohio Safety Products, 525 Seymour Ave.
Columbus, Ohio—Williams & Co., 900 Williams Ave.
Dallas 14, Tex.—Settle Safety Supply, P. O. Box 9826
Denver 7, Colo.—Goodall Rubber Co., 4661 E. 38th Ave.
Detroit 2, Mich.—Boyer-Campbell Co., 6560 St. Antoine St.
Detroit 34, Mich.—Sterling H. Dockson, 5285 E. Outer Dr.
East Orange, N. J.—Notte Safety Appliances Co., 340 N. Park St.
El Paso, Tex.—Mine & Smelter, 1515-11th Ave.
Farmington, N. M.—Settle Safety Supply, 2533 E. Main St.
Grants, N. M.—Plateau Hardware
Honolulu, Hawaii—Gaspro, Ltd., P. O. Box 2454
Houston 7, Tex.—Guardian Safety Equip., 200 Sandman St.
Jamaica, N. Y.—Beacon Safety Products Co., 120-37 237th St.
Kansas City, Kan.—Zink Safety Equip. Co., Inc., 1401 Fairfax Trafficway
Leesport, Pa.—Delaware Valley Safeguards Co., 400 Nichols St.
Little Rock, Ark.—Fire Appliance & Safety Co., 1114 W. Markham St.
Los Angeles 3, Calif.—Guardian Safety & Equip. Co., 7223 S. Main St.
Los Angeles, Calif.—Thompson Safety Equip. Co., 4907 W. Pico Blvd.
Louisville, Ky.—Williams & Co., Inc., 1109 S. Preston St.
Miami, Fla.—Helco Distributors Inc., 18480 W. Dixie Hwy.
Milwaukee, Wis.—Kennedy Ingalls Inc., 3735 N. 35th St.
Minneapolis, Minn.—Elvin First Aid Supply, 327 Second Ave.
Mobile, Ala.—Mobile Welding Supply, P. O. Box 1418
New Haven 11, Conn.—Abern Safety Equip. Co., 2 Eld St.
New Orleans, La.—Industrial Fire & Safety 1739 Baronne St.
Newton Centre 59, Mass.—Hub Safety Equip. Inc., 10 Nightingale Path
Oakland, Calif.—L. N. Curtis & Sons, 4133 Broadway
Odessa, Tex.—Settle Safety Supply, 207 N. Amvurgey
Omaha, Nebr.—Lang Aircraft Supplies, Muncipal Airport
Orlando, Fla.—Helco Distributors, Inc., 3703 S. Orange Blossom
Philadelphia, Pa.—General Scientific Equip. Co., 7516 Limekiln Turnpike
Philadelphia 4, Pa.—Guardian Safety Equip. Co., 214-16 S. 45th St.
Philadelphia 35, Pa.—Albert W. Pendergast Safety, 6913 Tulip St.
Phoenix, Ariz.—Arizona Safety Shoe & Equip Co., 4138 N. 19th Ave.
Pittsburgh 33, Pa.—Williams & Co., 901 Pennsylvania
Portland, Ore.—La Grand Industrial Supply Co., 15 Southwest Arthur
Portland 14, Ore.—Sanderson Safety, 935 S. E. Hawthorne
Rapid City, S. D.—Midwest Equipment Co.
Roanoke, Va.—The Wrights, 2036 Laburnum Ave.
Rosewell, N. M.—Smith Machinery Co.
Saginaw, Mich.—National Safety Products Co., 116 N. Hamilton St.
St. Louis, Mo.—Pulmosan Safety Equip. Corp., 1007 Washington Ave.
St. Louis 14, Mo.—Zink Safety Equip. Co., 7470 St. Charles Rock
St. Louis, Mo.—Reis Equip. Co., 1417 Tower Grove
St. Paul 4, Minn.—Continental Safety Equip. Inc., 1951 Selby Ave.
Salt Lake City 10, Utah—Universal Safety & FireEquip., 727 S. W. Temple
San Antonio 1, Tex.—Service Supply of San Antonio, 525 Culebra St.
San Diego 10, Calif.—R. J. Supply Co., 2225 San Diego Ave.
San Francisco, Calif.—Brenton Equip. Co., 374 Brannan St.
San Jose, Calif.—California Safety & Supply Co., 966 N. Fourth St.
Seattle 8, Wash.—L. N. Curtis, 1108 West Lake Ave.
Seattle, Wash.—Safety & Supply Co., 119 Blanchard St.
Shreveport, La.—Anchor Fire & Safety, Inc., 3816 Linwood Ave.
Tampa, Fla.—Safety Equip. Co. of Florida, 109 Hamiller
Toledo 2, Ohio—Acme Safety Products Co., 1823 Vermont Ave.
Toledo 12, Ohio—Williams & Co., 946 Kane St.
Tucson, Ariz.—Supplies for Industry Inc., 1202 N. Main Ave.
Tulsa 14, Okla.—Guardian Safety, 1742 S. Main St.
West Hartford 10, Conn.—Industrial Safety Supply Co., Inc., 574 New Park Ave.
Wolfeboro, N. H.—Hawkins Safety Equip. Co. Inc.
Youngstown, Ohio—Youngstown Safety Supply Co., 1144 Meadowbrook

Beirut, Lebanon—T. G. Mappleback, P. O. Box 2712
Calgary, Alberta, Canada—Canwest Safety Service Supplies, 135-3rd Ave. E.
Hamburg-Altona, Germany—Siegert & Co., Bahrenfelder-Steindamm
Helsinki, Finland—Oy Machinery, P. O. Box 129
Montreal 24, Que., Canada—Industrial Safeguards Co., 955 Amherst St.
Regina, Saskatchewan, Canada—MacKay-Morton, Ltd., 1174 Albert St.
San Juan 10, Puerto Rico—Abarca Warehouses Corp., P. O. Box 2352
Toronto 18, Ont., Canada—Bell Electricord & Safety Ltd., 341 Bering
Vancouver, B. C., Canada—Fleck Brothers, Ltd., 110 Alexander
Winnipeg, Manitoba, Canada—MacKay-Morton, Ltd., 183 James St. E.
Zurich 32, Switzerland—Riwosa, S. A., 80 Witikonerstrasse

CLARK EQUIPMENT COMPANY
Industrial Truck Division
24th & Lafayette St., Battle Creek, Mich.

Branch Offices:

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Cleveland 11, Ohio—3471 W. 140th St.
Detroit 2, Mich.—300 E. Milwaukee Ave.
Flint, Mich.—2630 S. Grand Traverse Rd.
Newark 5, N. J.—357 Wilson Ave.
New Orleans, La.—7838 Earhart Blvd.
New York 19, N. Y.—712 – 11th Ave.

Distributors:

Albany, N. Y.—Rushmore & Weber, Inc., Box 578, Latham, N. Y.
Allentown, Pa.—Industrial Lift Truck Co., 1633 Hanover Ave.
Anchorage, Alaska—Bashaw Equip. Co., Inc., P. O. Box 1999
Atlanta 18, Ga.—Wiley Equip. Co., 1199 Howell Mill Rd., N. W.
Auburn, Me.—W. D. Matthews Machinery, 885 Center St.
Aurora, Ill.—Valley Industrial Equip., 219 Holbrook
Bakersfield, Calif.—Gray Lift Inc., P. O. Box 6125
Baltimore 13, Md.—Maryland Industrial Trucks Inc., 1870 N. Gay St.
Birmingham 7, Ala.—Rushton Equip. Corp., Lamb Blvd. & Alabama Ave.
Boston, Mass.—Brodie Industrial Trucks Inc., 299 Mishawum Rd.
Buffalo 25, N. Y.—Brodie Industrial Trucks Inc., 1774 Walden Ave.
Charleston 4, W. Va.—Jefferds & Moore Inc., 3416 Chesterfield Ave.
Charleston, S. C.—Lukas Equip. Co., 2019 Pittsburgh St.
Charlotte 3, N. C.—Industrial Truck Sales & Service, 3029 Bank St.
Chattanooga, Tenn.—Valley Materials Handling Inc., 1086 Duncan
Cincinnati 15, O.—Portman Equip. Co., 3942 Virginia Ave.
Columbia, S. C.—Lukas Equip. Co., 710 Crosshill Ave.
Columbus 12, O.—Edward J. Sherry Co., 1055 W. Third Ave.
Dallas 15, Texas—Towne Industrial Equip. Co., 1410 S. Akard St.
Davenport, Ia.—Big River Equip. Co., 518 W. Fourth St.
Dayton 39, O.—Miami Industrial Trucks Inc., 2031 S. Broadway
Denver 4, Colo.—Francis & Sims, Inc., 2750 W. 17th Ave.
Des Moines, Ia.—Big River Equip. Co., 2912 6th Ave.
Duluth, Minn.—Material Handling Eng. Inc., 3006 W. First St.
Erie, Pa.—Erie Industrial Trucks Inc., 1012 Liberty St.
Eureka, Calif.—Eureka Boiler Works, Foot of 'S' St.
Evansville 7, Ind.—Black Equip. Co., 900 Maxwell Ave.
Ft. Wayne 4, Ind.—Materials Handling Equip. Corp., 3217 New U. S. 30 E.
Fresno 1, Calif.—Gray Lift Inc., 4446 E. Jensen Ave.
Grand Rapids, Mich.—Morrison Industrial Equip. Co., 1825 Monroe
Greensboro, N. C.—Industrial Truck Sales & Service, Elm St. & Highway 220 S.
Greenville S. C.—Lukas Equip. Co., 85 Cleveland St.
Harrisburg, Pa.—Fork Lifts Inc., 635 N. Cameron
Honolulu, Hawaii—International Div. U. S. Ind. Inc., 300 Sand Is. Access Rd.
Houston 20, Texas—Madden Equip. Corp. 5611 Clinton Dr.
Indianapolis 5, Ind.—W. A. Marschke & Sons, Inc., 1121-25 E. 46th St.
Jacksonville 3, Fla.—Daniel Equip. Inc., 2200 McCoys Creek Blvd.
Kansas City 8, Mo.—Lift Truck Sales & Ser., Inc., 1941 Central St.
Knoxville, Tenn.—Valley Materials Handling, Inc., 6012 Clinton Hy.
Little Rock, Ark.—Lift Truck & Service Co., 110 W. 9th St.
Los Angeles 22, Calif.—Robert H. Braun Co., 8314 E. Slauson Ave.
Louisville 16, Ky.—W. A. Marschke & Sons Inc., 3311 S. 7th St. Rd.
Lubbock, Texas—Western Materials Handling, Inc., 1610 Fourth St.
Massillon, O.—Hidstate Industrial Trucks, Inc., 256 Erie St. S.
Medford, Ore.—Top Line Equip. Co., 3360 N. Pacific Highway
Memphis, Tenn.—Delta Materials Handling, Inc., 185 E. Butler
Miami, Fla.—W. E. Johnson Equip. Co., 300 E. 10 Court
Milwaukee 16, Wis.—Wis. Industrial Truck Co., 3040 N. Capitol Dr.
Minneapolis 7, Minn.—Material Handling Engineers Inc., 4141 Cedar Ave. S.
Mishawaka, Ind.—Materials Handling Equip.Corp., 215 Lincolnway W.
Mobile, Ala.—ELM Equip. Co., 256 N. Washington Ave.
Modesto, Calif.—Lift-All, Inc., 1921 Yosemite Blvd.
Muskegon, Mich.—Morrison Industrial Equip. Co., 841 Ramey
Nashville, Tenn.—Material Handling Equip. Co., Inc., 815 6th Ave. S.
New Haven 15, Conn.—C. E. Routter Corp., Westville Sta. Amity Rd.
New Orleans 8, La.—7838 Earhart Blvd.
Norfolk, Va.—Industrial Trucks Inc., 540 S. Military Highway
Oakland 21, Calif.—Lifton, Inc., 6401 San Leandro St.
Oklahoma City, Okla.—Arst Equip. Co., 1901 W. Reno
Omaha 10, Nebr.—Christy Equip. Co., 4435 N. 20th St.
Orlando, Fla.—Whitmore Ind. Trucks, 2322 Diversified Way
Peoria 2, Ill.—R. E. Common Equip. Co., 1515 S. W. Washington
Philadelphia 25, Pa.—Industrial Lift Truck Co., 2200 Richmond St.
Phoenix, Ariz.—Naumann Lift Trucks, Inc., 522 E. Henshaw Rd.
Pittsburgh 5, Pa.—Material Handling, Inc., Parkway West
Portland 1, Ore.—Top Line Equip. Co., 5210 S. W. Corbett
Powers, Mich.—Wisconsin Ind. Truck Co., P. O. Box 101
Providence, R. I.—J. A. Kraatz Corp., 903 Main St.
Rialto, Calif.—R. H. Braun Co., 1762 S. Sycamore
Richmond, Va.—Industrial Trucks, Inc., 2207 Staples Mill Rd.
Roanoke, Va.—Crunkleton Co., 2701 Shenandoah Ave.
Rochester 6, —Rochester Ind. Trucks, Inc., 1168 Lexington Ave.
Rockford, Ill.—Geraghty Ind. Equip., Inc., 716 Market St.
Sacramento, Calif.—Lift-All, Inc., 2600 Harvard St.
St. Louis 18, Mo.—AAA Equip. Ser. Co., 3338 S. Jefferson
Salt Lake City 1, Utah—Archer Tractor & Machinery, 245 W. South Temple
San Antonio, Texas—Southwest Lift Trucks, Inc., 1037 Morales St.
San Diego, Calif.—R. H. Braun Co., 1210 Delevan St.
San Francisco 11, Calif.—Lifton, Inc., 215 Embarcadero
San Jose 12, Calif.—Warner-Yates Co., 1441 Terminal Ave.
Savannah, Ga.—Morgans, Inc., 111 W. Broad St.
Seattle, Wash.—Lifco, Inc., 1921 Minor Ave.
Shreveport, La.—Clark Equip. Co., 922 Charlotte St.
Spokane, Wash.—Lifco, Inc., N. 1007 Freya
Springfield 4, Mass.—Springfield Ind. Trucks, 398 Rocus St.
Syracuse 6, N. Y.—Thompson & Johnson Equip., P. O. Box 247
Tampa 5, Fla.—Whitmore Ind. Trucks, Inc., 3905 E. Broadway
Toledo 9, O.—Keen Truck Sales, Inc., 611 Daniels at Griffin
Toronto 14, Ontario—J. H. Ryder Machinery, 360 Evans Ave.
Tulsa 20, Okla.—Arst Equip. Co., 403 S. Peoria
Vancouver 10, B. C.—B. C. Conveying Machinery, 3300 Fraser St.
Washington 3, D. C.—Potomac Ind. Trucks, Inc., 1269 1st St., S. E.
Wichita, Kas.—Lift Truck Sales & Service, 1205 N. Mosely
Windsor, Ontario—J. H. Ryder Machinery Ltd., 1785 Walker Rd.
Winnipeg 1, Manitoba—J. H. Ryder Machinery Ltd., 1735 Sargent Ave.
Worcester, Mass.—Springfield Ind. Trucks, 58 S. West Cut Off
Youngstown 12, O.—Valley Industrial Trucks, 1152 Meadowbrook
Edmonton, Alberta—Mainline Equip. Ltd., 10410 45th Ave.
Montreal 9, Quebec—J. H. Ryder Machinery Co., 8455 Decarie Blvd.

CLARKE FLOOR MACHINE CO.
Division of Studebaker-Packard Corp.
30 E. Clay Ave., Muskegon, Mich.

Branch Offices:

Atlanta, Ga.—878 Allene Ave., S. W.
Avalon, Pittsburgh 2, Pa.—636 California Ave.
Baltimore 18, Md.—2720 Harford Rd.
Birmingham 6, Ala.—4505-5th Ave. S.
Boston 15, Mass.—1352-54 Boylston St.
Buffalo 16, N. Y.—1206 Hertel Ave.
Charlotte 6, N. C.—1014 Elizabeth Ave.
Chicago 34, Ill.—7011 W. Belmont Ave.
Cincinnati 25, O.—2949 Colerain Ave.
Cleveland 14, O.—3040 Hamilton Ave.
Dallas 7, Texas—2036 Irving Blvd.
Denver 23, Colo.—101 Kalamath St.
Des Moines 14, Ia.—219 W. University Ave.
Detroit 38, Mich.—8401 Puritan
Houston 1, Texas—724 Crawford St.
Indianapolis 3, Ind.—1025 Virginia Ave.
Irvington, N. J.—1242 Springfield Ave.
Jacksonville 7, Fla.—1075 Kings Ave.
Kansas City 8, Mo.—3003 Main St.
Los Angeles 16, Calif.—4711 W. Washington Blvd.
Memphis 4, Tenn.—185 S. Cooper St.
Miami 47, Fla.—3395 N. W. 67th St.
Milwaukee 10, Wis.—5412 W. Center St.
Minneapolis 14, Minn.—1826 Como Ave., S. E.
Muskegon, Mich.—30 E. Clay Ave.
New Haven, Conn.—822 State St.
New Orleans 25, La.—1207 So. Broad St.
New York 11, N. Y.—248 W. 23rd St.
Oklahoma City 4, Okla.—219 N. Western St.
Omaha 11, Nebr.—1812 Military Ave.
Philadelphia 40, Pa.—3315 North 9th St.
St. Louis 16, Mo.—3514 Meramec St.
Salt Lake City 15, Utah—74 W. Burton Ave. (2360 So.)
San Francisco 3, Calif.—1118 Harrison St.
Seattle 9, Wash.—706 Taylor Ave.
Syracuse Y, N. Y.—2007 Teall Ave.
Tucson, Ariz.—2627 N. 1st Ave.
Washington 15, D. C.—3815 Livingston St., N. W.

CLEVELAND LADDER CO., INC.
13921 Aspinwall Ave., Cleveland 10, O.

COLORADO FUEL & IRON CORP.
John A. Roebling's Sons Division
640 South Broad St., Trenton 2, N. J.

Branch Offices:

Atlanta, Ga.—934 Avon Ave., S. W.
Chicago, Ill.—5525 W. Roosevelt Rd.
Cincinnati, Ohio—10350 Evendale Drive
Cleveland, Ohio—13225 Lakewood Heights Blvd.
Denver, Colo.—4801 Jackson St.
Detroit, Mich.—915 Fisher Bldg.
Houston, Tex.—6216 Navigation Blvd.
Los Angeles, Calif.—5340 E. Harbor St.
Needham Heights, Mass.—15 Fourth Ave.
New York, N. Y.—Export Office, 575 Madison Ave.
New York, N. Y.—19 Rector St.
North Brunswick, N. J.—P. O. Box 151
Odessa, Tex.—1920 E. 2nd St.
Philadelphia, Pa.—230 Vine St.
S. San Francisco, Calif.—340 Roebling Rd.
Seattle, Wash.—900 First Ave., S.
Tulsa, Okla.—321 N. Cheyenne St.

COLUMBUS MCKINNON CORP.
Chain Division
Tonawanda, N. Y.

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Cleveland 15, Ohio—3030 Euclid Avenue
Mountainside, N. J.—1111 U.S. Route 22
San Francisco 7, Calif.—605 Third Street

Distributors:

Write for the name of the CM distributor in your area

CONDUCTIVE HOSPITAL ACCESSORIES CORP.
82 W. Dedham St., Boston 18, Mass.
**See ad page 256.

Branch Offices:

New York 17, N. Y.—460 E. 42nd St.

CONTROLS FOR RADIATION, INCORPORATED
130 Alewife Brook Parkway, Cambridge 40, Massachusetts

Branch Offices:

Sandusky, Ohio—National Aeronautics and Space Administration, Plum Brook Nuclear Facility

Distributors:

Boston, Mass.—American Fire Equip. Co., 717 Boylston
Los Angeles, Calif.—Chas. Fowler Co., 429 S. Western Ave.
Palo Alto, Calif.—Chas. Fowler Co., 499 Hamilton Ave.
Seattle, Wash.—Ray Johnston Co., 1031 E. 69th St.

COPPUS ENGINEERING CORP.
344 Park Ave., Worcester 10, Mass.
**See ad page 74.

Distributors:

Atlanta, Ga.—Evans L. Shuff & Assoc., 3120 Maple Dr., N. E.
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SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Birmingham, Ala. –Jos. W. Eshelman & Co., Inc., 1612 20th Ave., So. Homewood
Charlotte, N. C. –Brown & Morrison, 1900 E. 7th St.
Chicago, Ill. –Gen. Meters & Controls Co., 205 W. Wacker Dr.
Cleveland, O. –A. E. Ehrke & Co., 5171 Mayfield Rd.
Denver, Colo. –Davis & Davis, 504 Mining Exchange Bldg.
Detroit, Mich. –Garrett Burgess, Inc., 4660 Oakman Blvd.,
Duluth, Minn. –W. P. & R. S. Mars Co., 324 W. Michigan St.
Ft. Worth, Texas–Harris Pruitt & Co., 4025 W. Rosedale
Gardena, Calif. –King-Knight Co., 507 E. Alonda Blvd.
Hopkins, Minn. –R. G. Read & Co., 15310 Highway #7
Houston, Texas–Werlin and Co., 3402 Mercer, P. O. Box 22145
Indianapolis, Ind. –Avels Sales & Engr. Co., 1407 E. Riverside Dr.
Kansas City, Mo. –Hughes Machinery Co., 4212 Main St.
Memphis, Tenn. –Engineered Plant Equip. Inc., 22 S. Second St.
Metairie, La. –John H. Carter Co., Inc., 2551 Metairie Rd.
Milwaukee, Wis. –E. Gifford & Co., 6471 W. Fond du Lac Ave.
New York, N. Y. –Malcolm W. Black & Co., Inc., 41 E. 42nd St.
Philadelphia, Pa. –Edwin Elliot & Co., 360 N. 16th St.
Pittsburgh, Pa. –Bradshaw & Co., 311 Ross St.
Portland, Ore. –W. R. Norte Co., 216 N. E. Oregon St.
Richmond, Va. –W. H. Kidd & Co., 300 E. Main St.
Rochester, N. Y. –Johnston Engineering Co., 31 Gibbs St.
St. Louis, Mo. –Berger Equip. Co., 4030 Chouteau Ave.
Salt Lake City, Utah–North-Monson Co., P. O. Box 174
San Francisco, Calif. –King-Knight Co., 360 Jefferson St.
Seattle, Wash. –Preferred Equip. Engrs., 2615 5th Ave.
Tulsa, Okla. –Engineering Sales Co., 409 N. Cincinnati
W. Newton, Mass. –W. B. Wickerhan & Co., 1449 Washington St.

CORBIN-FARNSWORTH, INCORPORATED
440 Page Mill Road, Palo Alto, California

CORDO CHEMICAL CORP.
34 Smith St., Norwalk, Conn.

Branch Offices:

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New York, N. Y. –230 Park Ave.
Saugus, Calif. –West Golden Triangle Rd.

CORLETT-TURNER CO.
9143 King St., Franklin Park, Ill.
**See ad page 98.

COTTERMAN, I. D.
123 W. Spring Ave., Naperville, Ill.
**See ad page 66.

COTTON GOODS MFG. CO.
216 N. Clinton St., Chicago 6, Ill.

CROSBY-LAUGHLIN DIVISION
American Hoist & Derrick Co.
2511 W. Taylor St., P. O. Box 570, Fort Wayne 1, Ind.
**See ad page 207.

Branch Offices:

Longview, Texas–Lebus Mfg. Co.
Portland, Me. –Thomas Laughlin Div.
So. Kearney, N. J. –Crosby-Laughlin Div., Penn & Jacobus St.
Tulsa, Okla. –McKissick Products Co.

CROUSE-HINDS CO.
Wolf & 7th Sts., Syracuse 1, N. Y.

CUNNINGHAM, M. E., COMPANY
1025 Chateau St., Pittsburgh 28, Pa.
**See ad page 50.

Distributors:

Akron 8, Ohio–Excelsior Stamp Works Co., 80 Ash St.
Atlanta, Ga. –Dixie Seal & Stamp Co., P. O. Box 972
Baltimore 3, Md. –J. F. W. Dorman Co., Inc., 526 N. Calvert St.
Birmingham, Ala. –Moore-Handley Hdwe. Co., 27 S. 20th St.
Canton 2, Ohio–Excelsior Stamp Works Co., 121 4th St., N. E.
Chicago 5, Ill. –Metropolitan Hardware Co., 526 S. Dearborn St.
Chicago 6, Ill. –Meyer & Wenthe, Inc., 30 S. Jefferson St.
Cincinnati 2, Ohio–Jos. J. Sayre & Son Co., 417 Main St.
Cincinnati 25, Ohio–Orr Safety Equipment Co., 2853 Colerain Ave.
Cleveland 11, Ohio–Chandler & Fisher Co., 12908 Triskett Rd.
Cleveland 15, Ohio–Excelsior Stamp Works Co., 415 Eagle Ave.
Columbus 15, Ohio–Hiss Stamp Co., 195 E. Long St.
Dallas 1, Texas–Continental Supply Co., Continental Bldg.
Dayton 2, Ohio–Dayton Stencil Works, 113 E. Second St.
Des Moines 9, Iowa–Des Moines Rubber Stamp Works, 215 Fifth Ave.
Detroit 16, Mich. –McBride Stamp Co., 1419 Vermont Ave.
Detroit 16, Mich. –Superior Seal & Stamp Co., 1401 Vermont Ave.
Erie, Pa. –Kimmel Rubber Stamp & Prtg. Co., 920 W. 12th St.
Fort Wayne, Ind. –Maumee Weldments Co., Meyer & Moeller Rds.
Houston 14, Texas–Gribble Stamp & Stencil Co., P. O. Box 4068
Indianapolis, Ind. –Cain Safety Service, 1318 Hoyt Ave.
Kansas City 5, Mo. –Allen Marking Products, Inc., 804-806 Delaware
Los Angeles 15, Calif. –Los Angeles Stamp & Sta. Co., 1500 S. Los Angeles St.
Louisville, Ky. –Orr Safety Equipment Co., 300 E. Main St.
Mansfield, Ohio–Mansfield Rubber Stamp Co., 55 N. Diamond St.
Mobile, Ala. –Moore-Handley Hdwe. Co., 401 N. Water St.
Muskegon, Mich. –Muskegon Marking Equipment Co., 1147 Third St.
New Orleans 12, La. –New Orleans Stamp & Stencil Co., 330 Camp St.
New York 7, N. Y. –Krengel Mfg. Co., Inc., 227 Fulton St.
Philadelphia 6, Pa. –Quaker City Stencil & Stamp Co., 234 Arch St.
Pittsburgh 12, Pa. –Frick & Lindsay Co., Sandusky & Robinson St.
Pittsburgh 30, Pa. –Standard-Machinists Supply Co., S. Second & McKean St.
Portland 4, Ore. –City Rubber Stamp Co., 400 S. W. Second Ave.
Racine, Wis. –General Industrial Sales, Inc., 816 Sixth Ave.
Richmond, Va. –National Seal Works, Inc., P. O. Box 5183
Rochester 1, N. Y. –Lafler Engraving Co., Inc., 194 Mill St.
St. Louis 4, Mo. –Chas. K. Schweizer Co., 231 Russell Ave.
St. Louis, Mo. –Larrimore Co., P. O. Box 1236
St. Paul 1, Minn. –St. Paul Stamp Works, 65 E. Fifth St.
Salt Lake City, Utah–Salt Lake Stamp Co., 43 W. Third S.
San Francisco 4, Calif. –Patrick & Co., 560 Market St.
Seattle 4, Wash. –Puget Sound Stamp Co., 120 Marion St.
Spokane, Wash. –Spokane Stamp Works, 401 First Ave.
Toledo 2, Ohio–Toledo Stamp & Stencil Co., 125 N. Erie St.
Youngstown, Ohio–Excelsior Stamp Works Co., 8 S. Phelps St.
Wichita 1, Kan. –West Rubber Stamp Co., P. O. Box 575
Hamilton, Ontario, Canada–Barnard Stamp & Stencil, Ltd., 8 George St.
Monterrey, N. L., Mexico–Cia Mexicana De Electricidad, S. A. Zaragoza Net. 652, Apdo. 69

CUSTANITE CORP.
1228 Utica Ave., Brooklyn 3, N. Y.

DAMERON ENTERPRISES, INC.
427 S. 20th St., Louisville 3, Ky.
**See ad page 87.

DAVENPORT, A. C. & SON, INC.
311 N. Desplaines St., Chicago 6, Ill.

DAVID'S GLOVES, INCORPORATED
23 West Pleasant Street, Springfield, Ohio

Branch Offices:

Des Moines, Iowa–732 18th St. #503
Forest Hills, L. I., N. Y. –69-40 Yellowstone Blvd.
Johnston City, Tenn. –241 E. Watauga Ave.
Los Angeles, Calif. –8664 W. Pico Blvd.
Reading, Mass. –1207 Main St.
St. Louis, Mo. –4030 Chouteau
St. Louis, Mo. –6610 Clayton Rd.

DAVIS EMERGENCY EQUIPMENT COMPANY, INCORPORATED
55 Halleck Street, Newark 4, New Jersey
**See ad page 271.

Branch Offices:

Denver 6, Colo. –216 Clayton St.
Houston 6, Texas–2915 Louisiana St.
LaGrange, Ill. –140 N. LaGrange Rd.
Melrose 76, Mass. –130 W. Emerson St.

Distributors:

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Baltimore 3, Md. –Carey Machinery & Supply Co., 3501 Brehms Lane
Billings, Mont. –Big Horn Supply Inc., 2116 3rd Ave. N.
Buffalo 23, N. Y. –Elwood Corp., 2180 Elmwood Ave.
Charleston, W. Va. –Industrial Supply Co., 5518 MacCorkle Ave., S. E.
Chattanooga, Tenn. –Industrial Supply Co., 1226 Market St.
Cheyenne, Wyo. –Western Safety Equip. Co., 311 West 16th St.
Corpus Christi, Texas–Southwest Equip. & Extinguisher Co., 526 Palm Drive
Dallas, Texas–Baxter Sales Co., 3505 Turtle Creek
Dayton 2, Ohio–Fyr-Fyter Prod. Co., 415 Warren St.
Denver 16, Colo. –Union Supply Co., Box 6735, Stockyards Sta.
Des Moines, Iowa–Iowa Safety Equip. Co., 414-416 Twelfth St.
Detroit, Mich. –Argus Supply Co., 4340 E. Davison
El Paso, Texas–Joe H. Boone, Fire Equip. Co., 2230 E. Yandell Blvd.
Jacksonville, Fla. –White Star Sales Corp., 2030 E. Adams St.
Kingston, Pa. –S. S. Bretz, 62 N. Dawes Ave.
Lafayette, La. –Delta Fire & Safety Equip. Co., P. O. Box 1669, Oil Center Sta.
Lee's Summit, Mo. –Utilities Safety Supply Co., Jefferson St. & Highway 50
Longview, Texas–Baxter Sales Co., Box 3879
Los Angeles, Calif. –Dickson Safety Products Co., 12921 W. Washington Blvd.
Memphis, Tenn. –Dabney Hoover Supply Co., 45 W. Virginia St.
Miami, Fla. –Helco Distributors, Inc., Box 2092
Milwaukee, Wis. –Pagel Safety Products Co., 4615 W. National Ave.
Nashville, Tenn. –Smalling & Co., 604 Demonbreun St.
New Orleans, La. –Delta Fire & Safety Equip. Co., 523 Magazine St.
Norfolk, Va. –Paxton Supply Co., 1019 Main St.
Oakland, Calif. –L. N. Curtis & Sons, 4133 Broadway
Oklahoma City, Okla. –Bill Story Fire & Safety Co., 1521 W. Reno
Phoenix, Ariz. –Arizona Safety Equip. Co., 2020 Grand Ave.
Pittsburgh, Pa. –Somers, Fitler & Todd Co., 325 Fort Pitt Blvd.
Portland 9, Ore. –Huser Sales & Service, 1306 N. W., 18th Ave.
St. Louis, Mo. –William J. Roehl, Inc., 4568 Manchester Ave.
Salt Lake City, Utah–Industrial Supply Co., Inc., 131 Social Hall
San Antonio, Texas–Alamo Fire Equip. Co., 626 N. Leona
Seattle, Wash. –L. N. Curtis & Sons, 1108 Westlake Ave., N.
Shreveport, La. –Delta Fire & Safety Equip. Co., 5743 St. Vincent Ave.
Tulsa, Okla. –Edwards Allan Mfg. Co., 2445 S. Jackson
Youngstown 9, Ohio–Somers, Fitler & Todd Co., 3705 Oakwood Ave.
Edmonton, Alberta, Canada–Levitt Safety Ltd., 10205 105th Ave.
Montreal 26, Que., Canada–Levitt Safety Ltd., 4205 Courtral Ave.
Toronto 10, Ont., Canada–Levitt Safety Ltd., 747 Vaughan Rd.

DAYTON SAFETY LADDER CO., THE
2337 Gilbert Ave., Cincinnati 6, O.

DE BOTHEZAT FANS DIVISION
American Machine and Metals, Inc.
East Moline, Illinois

Branch Offices:

Baton Rouge 4, La. –4824 Woodside Drive
Chattanooga, Tenn. –c/o The Barton Bldg., 871 McCallie Ave.
Cuyahoga Falls, Ohio–P. O. Box 121
Dallas 35, Texas–P. O. Box 35424, 2512 W. Mockingbird Lane
Dania, Fla. –224 S. W. 12th St.
Davenport, Iowa–320 Western Ave.
Evansville, Ind. –R. R. 3, Rucker Rd., Box 404
Jackson 6, Miss. –P. O. Box 9806
Jacksonville 7, Fla. –1641 Landon Ave.
Omaha 1, Neb. –P. O. Box 568
South Bend, Ind. –707 South Eddy St.
Spokane, Wash. –East 115 Empire
Tulsa, Okla. –P. O. Box 1137

Edmonton, Alberta, Canada
Halifax, N. S., Canada
Lambeth (London), Ontario, Canada
Montreal, Quebec, Canada
Ottawa, Ontario, Canada
Quebec, P. Q., Canada
Saint John, New Brunswick, Canada
Vancouver, B. C., Canada
Windsor, Ontario, Canada
Winnipeg, Manitoba, Canada

Sales Representatives:

Albuquerque, N. M. –Electric Locator & Sales Co., 3921 Delamar, N. E.
Atlanta 3, Ga. –Hairston and Co., 400-Five Ivy Bldg.
Baltimore 18, Md. –Lancaster, May & Co., 4018 Old York Rd.
Belmont 78, Mass. –J. M. Pettingell Assoc., 385 Concord Ave.
Birmingham, Ala. –Bratton Sales Engineers, 2812-12th Ave., North
Buffalo 16, N. Y. –Irvington Sales, Inc., 1413 Hertel Ave.
Charleston, W. Va. –Engineering Prod., 709 Ruffner Ave.
Charlotte, N. C. –Robert E. Mason Co., 1726 Hutchinson Ave.
Chicago 43, Ill. –Wallin Engineering Sales Co., 11059 S. Hale Ave.
Cincinnati 27, Ohio–Romano Engineering Co., P. O. Box 67
Cleveland 3, Ohio–A. A. Gould & Co., 7016 Euclid Ave.
Denver 4, Colo. –Hubert Kaub & Co., 1025 Santa Fe Drive
Des Moines 9, Iowa–Deco Engineering Prod., Inc., 1112 Locust St.
Detroit 11, Mich. –E. J. Becker Sales Co., 2832 E. Grand Blvd.
DeWitt, N. Y. –A. H. Burnap, 120 Downing Road
Elizabethton, Tenn. –Paul A. Chapman & Assoc., P. O. Box 787, 413 East "D" Street
Fort Wayne, Indiana–The Neff Engineering Co., 2339 Crescent Ave.
Grand Rapids 4, Mich. –DeHaas and Mitchell, 2775 Lake Michigan Dr., N. W.
Houston 19, Tex. –Marshall, Neil & Pauley, Inc., P. O. Box 13197, 3513 West Dallas Ave.
Indianapolis, Ind. –Paller Engineering Co., 3025 North Illinois
Kansas City 5, Mo. –H. M. Curlman Co., 20 W. 9th St. Bldg.
Lima, Ohio–Harry Wright, Jr. & Assoc., P. O. Box 201
Los Angeles 7, Calif. –C. & S. Equipment Co., 235 W. 22nd St.
Memphis 4, Tenn. –Flinn Engineering Co., 123 N. Cleveland St., P. O. Box 8027, Crosstown Station
Milwaukee 17, Wis. –Grant E. Beverly Co., Inc., 5856 N. Port Washington Road
Minneapolis 3, Minn. –George R. Mellema Co., 620 Plymouth Bldg.
Nashville 3, Tenn. –James A. Harwell, 1123 Church Street
New Orleans 18, La. –Engineering Sales Co., 171 Audubon Blvd.
New York 7, N. Y. –V. John Meckus, 233 Broadway
Norfolk 10, Va. –Laurence Trant & Co., 111 W. Main St.
Oklahoma City, Okla. –Loeffler-Greene Supply Co., 1604 Northwest 5th Street
Orange, N. J. –Fred S. Bailey, 399 Lincoln Ave.
Paducah, Ky. –Ladt Engineering Company, Box 1256, Avondale Sta.
Pensacola, Fla. –Sansing Sales Engineers, P. O. Box 4627, 620-A West Barrancas
Philadelphia 3, Pa. –Coward-Eastman Co., 43 S. 23rd St.
Phoenix, Ariz. –O. K. McCullough Co., 1029 N. First St.
Pittsburgh 16, Pa. –Bushnell Machinery Co., 3015 W. Liberty Ave.
Portland 14, Oregon–H. W. McKenzie Co., 100 Northeast Holladay St.
Rock Island, Ill. –Harold D. Ziel, 1713-29½ St.
Saginaw, Mich. –Arthur C. Beckert Co., 21 Berger Rd.
St. Louis 8, Mo. –Warren Bruce & Co., 4903 Delmar Blvd.
Salt Lake City 15, Utah–Sales Engineering Co., Inc., 205 West Utopia Ave., P. O. Box 15418
San Francisco 3, Calif. –L. F. Church Co., 750 Natoma St.
Seattle 1, Wash. –E. H. Langdon Co., 72 Vine St.
Shreveport, La. –J. W. Cherry Co., 151 Olive St., P. O. Box 4098
Washington, D. C. –Howard Harlan, 1333 "G" St., N. W., Rm. 511
West Hartford 7, Conn. –Augur, Jones & Green, 62 LaSalle Rd.

Toronto, Ontario, Canada–Douglas Engineering Co., Ltd., 195 Bridgeland Ave.

DEFENSE APPAREL
115 Allyn St., Hartford, Conn.
**See ad page 263.

DETECTOGAS INSTRUMENTS, INC.
2706 Richmond Ave., Houston 6, Texas

DETEX WATCHCLOCK CORP.
76 Varick St., New York 13, N. Y.
**See ad page 250.

Branch Offices:

Atlanta 3, Ga. –Glenn Bldg., 116 Marietta St.
Boston 11, Mass. –99 Chauncy St.
Chicago 13, Ill. –4147 Ravenswood Ave.

Distributors:

Akron, O. –Fred Glenny, 1148 Linden Ave.
Allentown, Pa. –Lock Equip. Co., 1830 Green St.
Atlanta, Ga. –Dangler & Assoc. Inc. 3221 Cains Hill Pl., N. W.
Augusta, Ga. –W. E. Morris Fire Equip. Co., 1233 Jones St.
Aurora, Ill. –Industrial Supply Corp., 127 Gale St.
Baltimore, Md. –Davis Clock Sales & Service, Sisson & Fawcet Sts.
Billings, Mont. –The Old Clock Shop, 718 Parkhill Dr.
Binghamton, N. Y. –Byron B. Burgess, P. O. Box 1092
Birmingham, Ala. –J. T. Sudduth & Co., Inc., 3017 Sixth Ave.
Bristol, Tenn. –Bristol Office Supply Co., 28 Moore St.
Buffalo, N. Y. –Shields Bros., 1410 Main St.
Charleston, W. Va. –Property Protection Co., 422 Washington St., W.
Charlotte, N. C. –Barker Instrument & Machine Co., 1926 Cleveland
Chattanooga, Tenn. –Sarvis Business Machine Co., 2301 Bailey Ave.
Chicago, Ill. –W. S. Darley & Co., 2810 Washington Blvd.
Cincinnati, O. –Scallan Supply Co., 2337-39 Gilbert Ave.
Cleveland, O. –Cleveland Time Clock & Service Co., 1033 Payne
Columbus, Ga. –Equip. Supply & Service Co., 1328 Webster Ave.
Dallas, Texas–C. E. Fleck Co., 4010 Bowser Ave.
Danville, Ill. –Depke Welding Supplies, Inc., 628-30 E. Williams St.
Davenport, Ia. –Oscar O. Klinkhammer, 2019 W. Fifth St.
Dayton, O. –Dayton Stencil Works Co., 113 E. 2nd St.
Denver, Colo. –Sachs-Lawlor & Co., 1543 Larimer St.
Des Moines, Ia. –E. L. Lynch, 2218 39th St.
Detroit, Mich. –Averill Equip. Co., 19225 Conant Ave.
East Columbus, O. –L. J. Saunders Co., 207 Long St.
East Syracuse, N. Y. –R. E. Rolfe, 3560 Burnett Ave.
El Paso, Texas–Jay L. Harmar, Fire Equip Co., 307 San Francisco
Evansville, Ind. –M&S Fire & Safety Equip. Co., Kerth Ave. & Division St., Drillmaster Corner
Fairfield, Conn. –National Sales Co., P. O. Box 737 (Bridgeport, Conn.), 1801 Stratford Rd.
Fall River, Mass. –E. A. Waring, 419 Second St.
Fargo, N. D. –Hintz Fire Equip. Co., 1114 Front St.
Fort Wayne, Ind. –Safety Equip. & Supply Co., 1724 W. Main St.
Fort Worth, Texas–C. O. Hagood Co., 609 N. Sylvania
Gainesville, Ga. –Shirley Fire Protection Co., P. O. Box 604
Gary, Ind. –Gary Office Equip. Co., 25 W. 6th Ave.
Grand Rapids, Mich. –Tracy Clock Co., 907 Cherry St., S. E.
Green Bay, Wis. –W. A. Vorpahl Co., 1148 Velp Ave.
Greensboro, N. C. –Business Equip. Corp., 330 Bellmeade St.

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Greenville, S. C. –Barker Instrument & Machine Co., P. O. Box 3598
Hartford, Conn. –Gardiner W. Dogherty, 119 Ann St.
Holyoke, Mass. –Clarence A. Bemis, 1686 Northampton St.
Houston, Texas–W. J. Mountford, 7306 Harrisburg Blvd.
Indianapolis, Ind. –Midwest Fire & Safety Equip. Co., 1605 Prospect
Jacksonville, Fla. –Walter Kidde Sales & Service, 702-4-6 Tallyrand
Joplin, Mo. –Horton Office Supply Co., 211 W. 4th St.
Kansas City, Kans. –Kansas Typewriter Exchange, Inc., 749 Minnesota Ave.
Kingston, Pa. –Dictating & Sound Equip. Co., 866 Market St.
Knoxville 2, Tenn. –Southern Enterprises, P. O. Drawer 398
Lexington, Ky. –Raymond M. Shea, 419 S. Upper St.
Little Rock, Ark. –Fire Appliance & Safety Co., 1114 W. Markham
Long Island, N. Y. –Reynolds Industrial Equip. Co., 206 Jericho
Los Angeles 15, Calif. –Los Angeles Stamp & Stationery Co., 1500 S. Los Angeles St.
Los Angeles, Calif. –Time Clock Sales & Service Co., 801 W. 11th
Louisville, Ky. –B. F. Saunders Co., 935 E. Walnut St.
Lubbock, Texas–Hester's Office Supply Co., 1408 Texas Ave.
Madison, Wis. –E. L. Jefferson & Son, 516 E. Mifflin St.
Memphis, Tenn. –Hunley A. Slaughter, P. O. Box 6299
Miami, Fla. –The Clock Shoppe, 516 N. E. 79th St.
Milwaukee, Wis. –LaTona Office Equip. Co., 6223 W. Forrest Home
Minneapolis, Minn. –R. A. Bird, 45 Glenwood Ave.
Mobile, Ala. –Walter Kidde Sales & Service, 651 Pillans St.
Nashville 6, Tenn. –Southern Time Service, 539 Main St.
New Brunswick, N. J. –Kinber Business Machines Co., 514 Georges Rd
New Orleans, La. –A. F. Korson, 1141 Frenchman St.
Norfolk, Va. –H. W. Sykes, Flat Iron Bldg., Granby & Charlotte Sts.
Oklahoma City 4, Okla. –Bill Story Fire & Safety Co., 1521 W. Reno Turnpike, Floral Park
Omaha 6, Nebr. –Joseph France, 5560 Mason St.
Omaha 2, Nebr. –P. R. Hewes, 4515 Charles St.
Philadelphia, Pa. –Albert O. Barrett, 1737 Chestnut St.
Phoenix, Ariz. –Arizona Safety Equip. Co., 2020 Grand Ave.
Pittsburgh, Pa. –Cincinnati Time Recorder Dist., Thaw Bldg.
Portland, Me. –Eastern Fire Equip. Inc. 403-4 Fore St.
Portland, Ore. –Frank H. Parks, 213 S. W. Washington St.
Providence, R. I. –John Cheshire, Jr., 86 Waybosset St.
Reading, Pa. –Effinger Snyder, 1012 Barberry Rd.
Richmond, Va. –James E. Gardner, 2517 Chamberlayne Ave.
Ridgewood, N. J., –R. H. Halmage, 113 Prospect St.
Roanoke, Va. –Estes Communications Co., 402 Campbell Ave., S. W.
Rochester, N. Y. –Joseph J. McGrath, 907 Monroe Ave.
Rockford, Ill. –A. C. Van Auker, 108 Oakwood Ave.
Rome, Ga. –Battey Machinery Co., 102 W. 2nd Ave.
Royal Oak, Mich. –Hallock Clock Co., 702 W. 11 Mi. Rd.
St. Louis, Mo. –Capen Belting & Rubber Co., 1920 Washington Ave.
Saginaw, Mich. –Miller Fire Protection Co., 5360 Dixie Highway
Salt Lake City, Utah–Time & Instrument Co., 57 Richards St.
San Antonio, Texas–San Antonio Machine & Supply Co., P. O. Box 660
San Antonio, Texas–Robert T. Burns, 719 S. St. Mary's St.
San Francisco, Calif. –F. A. Thomas Co., 61 New Montgomery St.
San Francisco, Calif. –H. G. Scovem & Co., 19 Main St.
Savannah, Ga. –Safety First Co., 1209 E. Park Ave.
Seattle, Wash. –Time Equip. Co., 906 3rd Ave.
So. Bend, Ind. –A. N. Lucas, 629 S. Carroll St.
Springfield, Ill. –Dick Lawless Fire Equip. Co., 519 N. 4th St.
Springfield, Mo. –Barneby Office Supply, 517 St. Louis St.
Tampa, Fla. –Industrial Specialty Sales, 424 S. MacDill Ave.
Toledo, O. –Beach-Wood Assoc., 515 Manhattan Bldg.
Tulsa, Okla. –The Clock Shop, 811 S. Boston
Valdosta, Ga. –Carter & England, 123 W. Hill Ave.
Washington, D. C. –G. C. Salomone, 4020 Minnesota Ave., N. E.
Wichita, Kans. –Western Typewriter Co., 400 East First St.

DE VILBISS CO., THE
300 Phillips Ave., Toledo 1, O.

Branch Offices:

Atlanta 18, Ga. –1100 Northside Dr. N. W.
Baltimore, Md. –Court Square Bldg.
Chicago 7, Ill. –1280 W. Washington Blvd.
Cincinnati 29, O. –3418 Reading Rd.
Cleveland 5, O. –4008 E. 89th St.
Dallas 7, Texas–2506 Irving Blvd.
Dayton 2, O. –384 W. First St.
Detroit 3, Mich. –111 Oakman Blvd.
Fort Wayne, Ind. –2609 Broadway
Grand Rapids 2, Mich. –511 W. Fulton St.
Indianapolis, Ind. –132 E. 30th St.
Kansas City 5, Mo. –1016 Baltimore Bldg.
Los Angeles 22, Calif. –6811 E. Slauson Ave.
Milwaukee 16, Wis. –6915 W. Capitol Dr.
Minneapolis 6, Minn. –3018 E. Lake St.
New Orleans, La. –504 Delta Bldg.
Philadelphia 8, Pa. –401 N. Broad St.
Pittsburgh 34, Pa. –345 Mt. Lebanon Blvd.
St. Louis 32, Mo. –1501 Fairview Ave.
San Jose 12, Calif. –1335 N. 10th St.
Silver Spring, Md. –8616 Georgia Ave. Rm. 16
Springfield, N. J. –10 Stern Ave.

DIAMOND ALKALI CO.
300 Union Commerce, Cleveland 14, O.

Branch Offices:

Chicago 6, Ill. –20 N. Wacker Dr.
Cincinnati 29, O. –4701 Paddock Rd.
Cleveland 15, O. –421 Hanna Bldg.
Houston 2, Texas–1006 Main St.
Memphis 3, Tenn. –1381 Heistan Pl.
New York 16, N. Y. –99 Park Ave.
Philadelphia 7, Pa. –12 South 12 St.
Pittsburgh 22, Pa. –1323 Oliver Bldg.
St. Louis 8, Mo. –4246 Forest Park Blvd.

DIAMOND ELECTRONICS
Division of Diamond Power Specialty Corp.
Box 415, Lancaster, Ohio

Branch Offices:

Boston, Mass. –Diamond Power Specialty Corp., 10 High St.
Chicago, Ill. –Diamond Power Specialty Corp., 105 W. Adams St.
Los Angeles, Calif. –Diamond Power Specialty Corp., 4708 Crenshaw
New York, N. Y. –Diamond Power Specialty Corp., 666 Third Ave.
Philadelphia, Pa. –Diamond Power Specialty Corp., 404 Liberty Trust Bldg., Broad & Arch Sts.
Pittsburgh 16, Pa. –Diamond Power Specialty Corp., 1610 Potomac
San Francisco, Calif. –Diamond Power Specialty Corp., 406 Brannon

Distributors:

Atlanta, Ga. –Boiler Equip. Ser. Co., 1079 Alco St., N. E. (Box 13138)
Buffalo 26, N. Y. –Arthur E. Jones Co., 3 Stevenson Blvd.
Charlotte, N. C. –Brown & Morrison, 1900 E. 7th St.
Cincinnati, O. –Gemco Sales Co., Box 23
Cincinnati 8, O. –Lathrop Trotter Co., 3181 Linwood Rd.
Cleveland 15, O. –Cleveland Overseas Corp., 209 Hanna Bldg.
Cleveland 14, O. –J. W. Spencer Assoc., 639 Society For Sav. Bldg.
Cleveland 24, O. –Watson Power Equip. Co., 5603 Wilson Mills Rd.
Dallas, Texas–A. M. Lockett & Co., Ltd., 1701 Mercantile Dallas Bldg., 1807 Commerce St.
Dallas 26, Texas–Graybar Elec. Co., Inc., 717 Latimer St.
Denver, Colo. –The Steams-Roger Mfg. Co., 660 Bannock St.
Des Moines, Ia. –W. H. Bixby, Inc., 1117 High St.
Detroit, Mich. –Basic Service Corp., 16544 Plymouth Rd.
Hammond, Ind. –Graybar Elec. Co., Inc., 6445 Indianapolis Blvd.
Honolulu, Hawaii–Hawaiian Equip. Co., Ltd., P. O. Box 2990
Hopkins, Minn. –R. S. Read & Co., 15312 Highway 7
Houston, Texas–A. M. Lockett & Co., Ltd., 3484 W. 12th St.
Indianapolis, Ind. –Lathrop-Trotter Co., 4000 E. 16th St.
Jackson, Mich. –Fulton Radio & Supply Co., 1208 Greenwood Ave.
Kansas City, Mo. –Economy Equipment Co., 7341 Broadway
Kansas City, Mo. –Graybar Elec. Co., Inc., 1644 Baltimore Ave.
Lansing, Mich. –Fulton Radio & Supply Co., 2710 Alpha St.
Los Angeles, Calif. –C. C. Moore & Co., Engrs., 1111 Wilshire Blvd.
Louisville, Ky. –Chas. Weber Co., 536 Eastern Parkway
Milwaukee, Wis. –The W. Clasmann Co., 239 West Center St.
New Orleans, La. –A. M. Lockett & Co. Ltd., 308 Whitney Bldg.
Phoenix, Ariz. –C. C. Moore & Co., Engrs., 511 Lukes Building
Pittsburgh 37, Pa. –West Penn Controls Co., Box 11055
Portland 4, Ore. –C. C. Moore & Co., Engrs., 1120 Failing Bldg.
Radnor, Pa. –Emlen-Peterson Co., Montgomery Lane at King Of Prussia Rd.
Richmond, Va. –Berkness Control & Equip. Corp., 308 W. Cary St.
St. Louis, Mo. –Economy Equip. Co., 4526 Olive St.
Salt Lake City 1, Utah–The Steams-Roger Mfg. Co., 40 Richards St.
San Francisco, Calif. –C. C. Moore & Co., Engrs., 450 Mission St.
Schenectady, N. Y. –P. S. Miller, 1119 State St.
Seattle 4, Wash. –C. C. Moore & Co., Engrs., 417 Smith Tower
Seattle, Wash. –New Products, Inc., 6551 Phinney Ave.
Syracuse 2, N. Y. –Arthur E. Jones Co., 605 Eckel Theatre Bldg.
Tulsa 4, Okla. Graybar Elec. Co., Inc., 2406 E. 12th St.
Washington 6, D. C. –Washington Engrg. Inc., 1025 Connecticut Ave., N. W.

DIENER INDUSTRIES INC.
400 N. Monticello Ave., Chicago 24, Ill.

DIETZ, R. E., CO.
225 Wilkinson St., Syracuse 1, N. Y.

Distributors:

Albany, N. Y. –R. B. Wing & Son Corp., 384 Broadway
Albuquerque, N. M. –McCaffrey Materials Co., 2107 Menaul, N. E.
Arlington, Va. –Krauser Equip. Co. Inc., 425 15th St. S.
Atlanta 17, Ga. –Municipal Fire & Safety Co., 4369 W. Club
Austin, Tex. –Central Tex. Equip. Co., 127 Riverside Dr.
Baltimore, Md. –John C. Louis Co., Inc., 1805 Cherry Hill Rd.
Bangor, Maine–Haynes & Chalmers Co., 176 Exchange St.
Barre, Vt. –Reynolds & Son, Inc., 84 Main St.
Birmingham 2, Ala. –Moore-Handley Hdwe. Co., Inc., 27-20th St. S.
Bismark, N. D. –Midwest Equip. Co., 1400 Main Ave.
Boise, Idaho–Idaho Hdw. & Plumbing Co., 408 South 8th St.
Boston 18, Mass. –R. G. Mearn Co., Inc., 363 Albany St.
Charlotte, N. C. –Contractors Service & Rentals, Inc., 317 W. Worthington Ave.
Cheyenne, Wyo. –Wilson Equip. & Sup. Co., 730 S. Greeley Hwy.
Chicago, Ill. –Ace Hardware Corp., 2285 S. Blue Island Ave.
Chicago, Ill. –Clifford Peterson Tool Co., 123 N. Jefferson St.
Clarksburg, W. Va. –West Virginia Mine Sup. Co., 212 Ohio Ave.
Cleveland, Ohio–Mac-Sherwood Supply Co., 800 Lime Rd.
Collinsville, Ill. –Lee M. Reinsch Supply Co., 110 E. Main St.
Concord, N. H. –Sanel Industrial, Inc., 198 S. Main St.
Denver, Colo. –Hendrie & Bolthoff Mfg. & Sup. Co., 1635 17th St.
Des Moines 14, Iowa–Iowa Machinery & Sup. Co., 1711 Second Ave.
Detroit 38, Mich. –H. D. Edwards & Co., 8550 Lyndon Ave.
East Providence, R. E. –J. J. Gregory & Son, Inc., 54 Water St.-77 Highland Ave.
Hartford, Conn. –L. L. Ensworth & Son, Inc., 270 Locust St.
Helena, Mont. –Montana Powder & Equip. Co., 12 E. Lawrence
Honolulu 10, Hawaii–Islands Welding & Sup. Co., Ltd., 651 S. Queen St.
Houston 23, Tex. –Beacon Supply Co., 1610 Dumbel St.
Indianapolis 21, Ind. –Reid-Holcomb Co., Inc., 1815 Kentucky Ave.
Kansas City, Mo. –Richards & Conover Steel & Sup. Co., 5th & Wyandotte Sts.
Little Rock, Ark. –Arkansas Equip. Co., Inc., 204 River Rd.
Little Silver, N. J. –Zoubek Assoc., Inc., 42 Birch Ave.
Los Angeles, Calif. –J. G. Tucker & Son, 435 E. Third St.
Louisville, Ky. –Belknap Hdw. & Mfg. Co., 111 E. Main St.
Memphis, Tenn. –Pidgeon-Thomas Iron Co., Crump Blvd. at S. Main
Miami 31, Fla. –Railey Milam, Inc., 251 N. W. 1st Court
Milwaukee 1, Wis. –Shadbolt & Boyd Co., 413 N. 2nd St.
Minneapolis 14, Minn. –Zeco Company, 2929 University Ave., S. E.
New Orleans, La. –Woodward, Wight & Co., 451 Howard Ave.
New York, N. Y. –Topping Bros., Varick & Vandam Sts.
Newport News, Va. –Noland Co., 2700 Virginia Ave.
Oakland, Calif. –General Machine & Sup. Co., 1480 14th St.
Omaha 8, Neb. –Anderson Equip. Co., 200 Merchants National Bldg.
Philadelphia, Pa. –Casanave Supply Co., 2028 Sansom St.
Phoenix, Ariz. –Pratt-Gilbert Co., 701 S. 7th St.
Salt Lake City, Utah–Salt Lake Hardware Co., 105 N. 3rd W. St.
San Antonio, Tex. –Alamo Iron Works, P. O. Box 231
San Diego 12, Calif. –Western Metal Sup. Co., 7th & K Sts.
San Francisco, Calif. –Baker & Hamilton, 700 7th St.
Seattle, Wash. –Campbell Indus. Sup. Co., 3433 Airport Way
Spokane, Wash. –Jensen-Byrd Co., 320 Riverside Ave.
Syracuse, N. Y. –Drennan Steel Prod. Corp., 924 Oswego Blvd.
Toledo 1, Ohio–Bostwick-Braun Co., Cor. Summit & Monroe
Washington 7, D. C. –Way Hardware Co., 6031 Kansas Ave., N. W.
Wichita, Kan. –Phillips & Easton Sup. Co., 240 S. Wichita St.
Wilmington 99, Dela. –Hudson Supply Co., 117 Market St.

DILLON, W. C. & CO., INC.
14620 Keswick St., Van Nuys, Calif.

DISNEY PRODUCTIONS, WALT
16mm Film Division
500 S. Buena Vista St., Burbank, California
**See ad page 283.

Branch Offices:

New York 22, N. Y. –477 Madison Avenue
Park Ridge, Illinois–237 N. Northwest Hwy.

DOCKSON CORP.
3809 Wabash, Detroit 8, Mich.
**See ad page 127.

Distributors:

Located in principal cities.

DOLGE, C. B., CO.
Ferry Lane, Westport, Conn.

DORSAY PRODUCTS CO.
200 W. 57th Street, New York, New York
**See ad page 126.

Branch Offices:

New York 19, N. Y. –Nos-Ease Co., 200 W. 57th St.

Distributors:

Buffalo 14, N. Y. –R. H. Voye Co., 285 Parker Ave.
Buffalo 20, N. Y. –Steinwach's Safety Supply, 1373 S. Park Ave.
Chicago 10, Ill. –Protective Equip., Inc., 634 Orleans St.
Cleveland 6, O. –The Kimball Safety Products Co., 9310 Wade Park
Dayton, O. –Dayton Safety Supply, 11 Longworth St.
Detroit, Mich. –Argus Supply Co., 4340 E. Davison
East Orange, N. J. –Notte Safety Appliances Co., 340 N. Park St.
Longview, Texas–Baxter Sales Co., P. O. Box 5879
Milwaukee 14, Wis. –Pagel Safety Products Co., 4615 N. National Ave.
New Britain, Conn. –Corey Optical Co., Inc., 399 W. Main St.
Philadelphia 4, Pa. –Guardian Safety Equip. Co., 214-16 So. 45th St.
Philadelphia 33, Pa. –Industrial Products Co., 2820 N. 4th St.
Youngstown, O. –Youngstown Safety Supply Co., 1144 Meadowbrook

DORSEY, JOHN E., COMPANY
570 East First Street, Boston 27, Massachusetts

Distributors:

Akron 20, Ohio–W. Albin Johnson, 1350 Earhart St.
Arlington 7, Va. –Charles H. Russell, 4403 19th St., North
Atlanta 5, Ga. –Tri-State Utility Prod., 2562 Sharondale Dr.
Bay City, Mich. –Walter L. Foss Co., 2306 Normi Drive
Binghamton, N. Y. –Gabler Assoc., Box 739
Chattanooga 11, Tenn. –Clyde W. Ledford, 1325 Phil's Drive
Columbia, S. C. –Engineer Sales Co. of Carolina, P. O. Box 5085
Havertown, Pa. –Robert F. Leahy, 237 Wendover Driver
Kansas City 6, Mo. –Williams & McKinley Sales Co., 417 Grand Ave.
New Orleans 12, La. –Dupont-Wachter & Co., 609 Tchoupitoulas St.
Palmetto, Fla. –DeFrees Sales, Inc., P. O. Box 757
Phoenix, Ariz. –Potter-Bowman Co., 213 North 1st Ave.
Waco, Texas–Tolanisa Sales Co., 3104 Alexander Ave.

DOW CHEMICAL CO.
Abbott Rd. Bldg., Midland, Mich.

Sales Offices:

Atlanta 3, Ga. –1714 Fulton Natl. Bank Bldg.
Boston 16, Mass. –520 Boylston St.
Buffalo 2, N. Y. –70 Niagara St.
Camden 2, N. J. –400 Market St.
Charlotte 2, N. C. –904 Wachovia Bank Bldg.
Chicago 48, Ill. –6000 W. Touhy Ave.
Cincinnati 6, O. –2330 Victory Parkway
Cleveland 13, O. –55 Public Square
Dallas 1, Texas–1505 Elm St.
Detroit 2, Mich. –490 Fisher Bldg.
Houston 25, Texas–4910 Fannin St.
Los Angeles 17, Calif. –900 Wilshire Blvd.
Minneapolis 3, Minn. –1750 Hennepin Ave.
New Orleans 12, La. –1100 Commerce Bldg.
New York 20, N. Y. –45 Rockefeller Plaza
Pittsburgh 22, Pa. –Four Gateway Center
St. Louis 5, Mo. –10 S. Brentwood Blvd.
San Francisco 4, Calif. –350 Sansome St.
Sarnia, Ontario–Dow Chem. of Canada, Ltd., Gen. Offices and Plant
Seattle 1, Wash. –307 Broad St.

DOW CORNING CORPORATION
P. O. 593, Midland, Michigan
**See ad page 107.

Branch Offices:

Alhambra, Calif. –3033 W. Mission Rd.
Atlanta 2, Ga. –P. O. Box 5074
Boston 16, Mass. –1214 Statler Office Bldg., 20 Providence
Chicago 39, Ill. –6101 W. Fullerton Ave.
Cleveland 20, Ohio–3592 Lee Rd.
Dallas 31, Texas–6778 Greenville Ave.
Englewood Cliffs, N. J. –401 Sylvan Ave.
Silver Spring, Md. –8605 Cameron St.

Distributors:

Akron 20, Ohio–Acme Safety Products Co., 387-389 Storer Ave.
Amarillo, Texas–Radcliff Supply Co., Box 1987, 208 Polk St.
Atlanta, Ga. –Bausch & Lomb Optical Co., Rhodes Bldg., 78 Marietta St.
Avoca, N. Y. –Robin W. Adair Co., Inc.
Baltimore 3, Md. –Carey Machinery & Supply, P. O. Box 206, 3501 Sinclair Lane
Beaumont, Texas–Sabine-Neches Safety Equipment Co., P. O. Box 5012
Belleville 7, N. J. –Standard Safety Equipment Co., 13 Hecker St.
Birmingham 4, Ala. –Industrial Safety Supply Co., 1727 Huntsville Rd.
Boston, Mass. –A. E. Halperin Co., Inc., 75-87 Northampton St.
Buffalo 23, N. Y. –The Elwood Corp., 2180 Elmwood Ave.

Continued on next page

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Buffalo 20, N. Y.—Steinwachs' Safety Supply, 1573 South Park Ave.
Buffalo 13, N. Y.—American Allsafe Co., Inc., 1245 Niagara St.
Carlsbad, N. M.—The Mine Supply Co., P. O. Box 951, 402 S. Main
Charleston 4, W. Va.—Industrial Safety Supply Co., 5518 MacCorkle Ave., S. E.
Charleston 1, W. Va.—Safety First Supply Co., 1104 Quarrier St.
Chattanooga 8, Tenn.—C. O. Genter Co., 2109-15 Broad
Chicago 39, Ill.—Universal Safety Equipment Co., 5115 W. Diversey
Cincinnati 25, Ohio—Orr Safety Supply Co., 8853 Colerain Ave.
Cincinnati 6, Ohio—The Scallan Supply Co., 2337-2339 Gilbert Ave.
Cleveland 5, Ohio—Brodhead-Garrett Co., 4560 E. 71st St.
Cleveland 12, Ohio—Standard Glove Co., 13200 Woodworth Rd.
Cleveland, Ohio—Strong Carlisle & Hammond Co., 11870 Berea Rd.
Columbus 5, Ohio—Ohio Safety Products Co., 528 Seymour Ave.
Corpus Christi, Texas—Southwest Equip. & Extinguisher, 526 Palm Dr.
Dallas 25, Texas—Engineering Supply Co., 6000 Denton Dr.
Dallas, Texas—Guardian Safety Equip. Co., 3107 Commerce
Denver 17, Colo.—Hendrie & Bolthoff Co., 1635 Seventeenth St.
Detroit 34, Mich.—Averill Equipment Co., 19225 Conant Ave.
Detroit 2, Mich.—The Boyer-Campbell Co., Div. of White Sewing Machine Corp., 6540 St. Antoine St.
East Orange, N. J.—New Jersey Safety Equip., P. O. Box 186
El Paso, Texas—Regal Janitor Supply & Paper Co., Box 1955
Fort Wayne, Ind.—Safety Equipment & Supply Co., 1724 W. Main St.
Hartford 12, Conn.—Honiberg Medical & Surgical Supply Co., 1001 Albany Ave.
Honolulu 10, Hawaii—Island Welding and Supply Co., Ltd., P. O. Box 94, 651-655 S. Queen St.
Houston 19, Texas—Guardian Safety Equipment, P. O. Box 13384
Houston 7, Texas—Mine Safety Appliances Co., 916-918 Waugh Dr.
Houston 7, Texas—Safety Engineering and Equipment Co., 4917 Feagan
Hubbard, Ohio—Federal Whse. Co., 734 Myron St.
Hudson, N. Y.—Bausch and Lomb Optical Co., 545 Washington St.
Indianapolis 3, Ind.—Cain Safety Service, 1318 Hoyt Ave.
Jamaica 32, N. Y.—Safety Equipment Service Corp., 166-12 89th Ave.
Kalamazoo, Mich.—Safety Services, Inc.—1903 W. Main
Kansas City 1, Kan.—L. R. Stone Supply Co., 405 N. Sixth St.
Kansas City 15, Kan.—Zink Safety Equipment Co., 1401 Fairfax Trafficway
Knoxville, Tenn.—Safety Equipment Distributing Co., 830-832 W. Main St.
Lake Charles, La.—Lake Charles Pipe & Supply Co., 1228 Broad St.
Long Island City 6, N. Y.—Eastern Safety Equip. Co., Inc., 25-09 36th
Long Island City 1, N. Y.—W. S. Wilson Corp., 47-50 30th St.
Longview, Texas—Baxter Sales Co., P. O. Box 171
Los Angeles 3, Calif.—E. D. Bullard Co., 6719 S. Figueroa St.
Los Angeles 66, Calif.—Dickson Safety Products Co., 12921 W. Washington Blvd.
Los Angeles 26, Calif.—Kent H. Landsberg Co., Inc., 601 N. Alvarado
Los Angeles 7, Calif.—Mine Safety Appliances Co., 115 W. 25th St.
Louisville, Ky.—Orr Safety Equipment Co., 300 E. Main St.
McCamey, Texas—Thompsons' Specialties, P. O. Box 1118
Memphis, Tenn.—Clement Safety Equipment, 720 S. Third St.
Milwaukee, Wis.—Universal Safety Equip. Co., 5237 W. Electric Ave.
New Britain, Conn.—Corey Optical Co., Inc., 399 W. Main St.
New Orleans 7, La.—Standard Supply and Hardware Co., Inc., P. O. Drawer 620, 822-866 Tchoupitoulas St.
Newark 4, N. J.—Safeguard Industrial Equipment Co., 271 Verona Ave.
Norfolk, Va.—Old Dominion Paper Co., 44th Colley Ave.
Orange, N. J.—Industrial Products Co., 400 S. Jefferson St.
Palatine, Ill.—Standard Safety Equipment, 431 N. Quentin Rd.
Peoria, Ill.—Standard Industrial Products, 3527 W. Farmington Rd.
Philadelphia 4, Pa.—Guardian Safety Equip., 234-216 S. 45th St.
Philadelphia 33, Pa.—Industrial Products Co., 2820 N. Fourth St.
Pittsburgh 19, Pa.—Safety First Supply Co., 425 Magee St.
Phoenix, Ariz.—Garrett Corp., Supply Div., P. O. Box 11038
Portland 4, Ore.—J. E. Haseltine and Co., P. O. Box 3342
Portland 14, Ore.—Sanderson Safety Supply Co., Inc., 935 S. E. Hawthorne Blvd.
Richmond 11, Va.—Smith Courtney Co., 7th & Bainbridge Sts.
Roanoke, Va.—Jones Welding Supplies, 225 Eleventh St., S. E.
Rochester 7, N. Y.—Rochester Safety Equipment Co., Inc., 83 Howell St.
Saginaw, Mich.—National Safety Products, 116 N. Hamilton St.
St. Louis 1, Mo.—Pulmosan Safety Equipment Corp., 1007 Washington
St. Louis 14, Mo.—Zinc Safety Equipment Co., 7470 St. Charles Rock
St. Paul 4, Minn.—Continental Safety Equipment, 1551 Selby Ave.
Salt Lake City 1, Utah—The Mine and Smelter Supply Co., 121 W. Second South St.
Salt Lake City 10, Utah—Universal Safety & Fire Equipment Co., Inc. P. O. Box 1587, 727 S. W. Temple
San Francisco 7, Calif.—Brenton Equipment Co., 374 Brannan St.
San Francisco 3, Calif.—Mine Safety Appliances Co., 1255 Howard St.
Schenectady, N. Y.—LeValley and McLeod, 126-40 Van Guysling Ave.
Seattle, Wash.—J. E. Haseltine and Co., 510 First Ave., S.
Syracuse, N. Y.—LeValley & McLeod, Inc., Box 207 Eastwood Sta.
Tampa, Fla.—Safety Equipment Co. of Fla., 9305 Florida Ave.
Toledo 2, Ohio—Acme Safety Products Co., 1823 Vermont Ave.
Toledo 10, Ohio—Safety First Supply Co., 858 W. Delaware Ave.
Tulsa, Okla.—Engineering Supply Co., 1124 E. 4th St.
Tulsa 19, Okla.—Guardian Safety Equipment, 1742 S. Main St.
Washington 1, D. C.—S. Freedman & Sons, 618 K St., N. W.
Waterbury, Conn.—Industrial Paper & Plastic Co., 531 Bank St.
West Hartford 10, Conn.—Industrial Safety Supply Co., Inc., 574 New Park Ave.
W. Springfield 4, Mass.—Carter Paper Co., 136 Wayside Ave.
Williamsport, Pa.—Freeman Optical Co., Inc., P. O. Box 176, 137 E. 4th Street

DOWNS CRANE & HOIST CO.
8827 S. Juniper St., Los Angeles 2, Calif.

Distributors:

Baltimore 3, Md.—Carey Machinery & Supply, 3501 Brehms Lane
Dayton 9, O.—Paul E. Neff Co., 4073 Upham Rd.
Denver 14, Colo.—Materials Handling Equip., 1795 Sheridan Blvd.
Casper, Wyo.—Studer Tractor & Equip. Co., 2300 E. Yellowstone Hwy.
Chicago 6, Ill.—Biddle Purchasing Co., 300 W. Adams St.
Chicago 6, Ill.—Slings Mfg. & Distr. Co., 205 W. Wacker Dr.
Cleveland 13, O.—Pennsylvania Sling Co., 2148 W. 25th St.
Columbus 3, O.—R. E. Condit Co., 499 Bonham Ave.
Covington, Ky.—The Borne Co., 2nd & Court Sts.
Houston 25, Texas—Stewart Engineering & Equip., 8702 S. David St.
Indianapolis 2, Ind.—The Tway Co., 602 N. Park Ave.
Kansas City 26, Mo.—Union Wire Rope Corp., 21st & Manchester Ave.
Long Island, N. Y.—Joseph G. Pollard Co., Inc.
Los Angeles, Calif.—Irving G. King Co., 821 S. Mateo
Los Angeles 32, Calif.—Stanley E. Morris Co., 5504 Alhambra Ave.
Los Angeles 13, Calif.—W. T. Billard, Inc., 734 E. 3rd St.
Milwaukee 7, Wis.—Slings & Ropes, Inc. 344 E. Ward St.
Newark 5, N. J.—Reliance Equip. Co., 59-65 McWhorter St.
New York 8, N. Y.—Biddle Purchasing Co., P. O. Box 743
Pittsburgh 26, Pa.—Pennsylvania Sling Co., 501 McNeilly Rd.
Portland 4, Ore.—J. E. Haseltine & Co., 2nd Ave. & Ash St.
Roanoke 8, Va.—Tidewater Supply Co., P. O. Box 1829
Rochester, N. Y.—Syracuse Supply Co., 1349 University Ave.
Salt Lake City 15, Utah—Holland Equip. Co., 2295 S. 2nd West
Vernon, Calif.—Howard Supply Co., 5125 S. Santa Fe
Woodbridge, N. J.—Hansen & Yorke Co. of N. J., 455 Green St.

DOYLE VACUUM CLEANER CO.
225 Stevens St., S. W., Grand Rapids 2, Mich.

Distributors:

Atlanta, Ga.—Momar, Inc. P. O. Box 2522, Sta. 'D'
Chicago 18, Ill.—Krano Supply Co., 3502 Elston Ave.
Cincinnati 14, O.—Graybar Electric Co., Inc. P. O. Box 298, Annex Sta.
Dallas, Texas—Conco Chemical Co., 2411 Swiss Ave.
Detroit 4, Mich.—Colman Supply Co., 9120 Roseland
Newark 7, N. J.—K. B. S. Chem & Jan. Supply, 127 S. 15th St.
New Orleans 12, La.—Walter Supply Co., 545 Magazine St.
New York 17, N. Y.—Lehara Corp., 60 E. 42nd St.
Oakland 7, Calif.—Keene-Riese Supply Co., 430-36 9th St.
Omaha 10, Nebr.—Industrial Chemical Labs., 1015 N. 14th St.
Portland 14, Ore.—Northwest Wholesale Dist., 12 S. E. Grand Ave.
St. Paul 4, Minn.—H. V. Smith Co., 1910 University Ave.
Seattle 4, Wash.—Packer-Scott Co., 1232 S. 6th Ave.
Spokane, Wash.—Conley Chem. & Supply Co., 4th at Oak
Syracuse 4, N. Y.—Wm. E. Moore Co., 621 S. West St.
York, Pa.—Bond Sanitary Products Co., E. Market at R. R.
Youngstown 3, O.—Superior Chem. Products Co., 30 N. Watt St.
Fort Wayne, Ind.—Moellering Supply Co., 824 W. Main St.
Grand Rapids, Mich.—Van-Wood Chem. Corp., 109 Logan St., S. W.
Greensboro, N. C.—Aspden Assoc., Inc., 1003 Battleground Ave.
Indianapolis 7, Ind.—Brulin & Co., 2939-45 Columbia Ave.
Indianapolis 5, Ind.—Globe Industrial Supplies, 546 W. Washington
Milwaukee, Wis.—Clymar Eng. & Sales, 416 W. Walnut St.

DRAEGER OXYGEN APP. CORP.
Park Ave. South 432, New York 16, N. Y.

DRAVO CORPORATION
Neville Island, Pittsburgh 25, Pa.

Branch Offices:

Atlanta, Ga.—1401 Peachtree St.

Distributors:

Arlington, Va.—Atlas Machine & Iron Works, 1252 Jefferson David Hwy.
Atlanta, Ga.—Golian Steel & Iron Co., Five Ivy Bldg.
Birmingham, Ala.—Charles F. Wheelock & Assoc., 205 S. 32nd St.
Bluefield, Va.—Platnick Brothers
Boston, Mass.—Jos. T. Ryerson & Son, Inc., 60 Everett St.
Buffalo, N. Y.—Jos. T. Ryerson & Son, Inc., 40 Stanley St.
Charlotte, N. C.—Jos. T. Ryerson & Son, Inc., Mount Holly & Chemway
Chicago, Ill.—Jos. T. Tyerson & Son, Inc., 16th & Rockwell Sts.
Chicago, Ill.—George B. Limbert Co., 208 S. LaSalle St.
Cincinnati, Ohio—Jos. T. Ryerson & Son, Inc., 3475 Spring Grove Ave.
Cleveland, Ohio—Jos. T. Ryerson & Son, Inc., 5400 Lakeside Ave.
Corpus Christi, Tex.—Gulf Iron Works, McBride Lane
Dallas, Tex.—Jos. T. Ryerson & Son, Inc., 4606 Singleton Blvd.
Denver, Colo.—Hank Thurstin Co., 475 Acoma St.
Detroit, Mich.—Charles F. Barton Co., Inc., 15529 Woodrow Wilson
Detroit, Mich.—Jos. T. Ryerson & Son, Inc., 1600 E. Euclid Ave.
El Paso, Tex.—El Paso Pipe & Supply Co., 6914 Industrial Blvd.
Emeryville, Calif.—Jos. T. Ryerson & Son, Inc., 65th & Hollis Sts.
Greenville, S. C.—Edward McCrady Co., 107 Stokes Bldg.
Houston, Tex.—Jos. T. Ryerson & Son, Inc., 1211 Kress St.
Houston, Tex.—Taylor Forge & Pipe Works of Texas, Inc., 707 N. Drennan St.
Huntington, W. Va.—Huntington Steel & Supply Co., 100 Third Ave.
Indianapolis, Ind.—Donie Engineering Sales, 5420 N. College
Indianapolis, Ind.—Jos. T. Ryerson & Son, Inc., 6701 E. English Ave.
Jacksonville, Fla.—Charles H. Liphart & Son, 724 Bugbee St.
Jersey City, N. J.—Jos. T. Ryerson & Son, Inc., 203 Westside Ave.
Kansas City, Mo.—Olander-Weatherholt Co., 3419 Broadway
Los Angeles, Calif.—Jos. T. Ryerson & Son, Inc., 4310 E. Bandini
Louisville, Ky.—Neil-LaVielle Supply Co., 2211 S. Brook St.
Miami, Fla.—Metallic Engineering Co., 3701 N. W. 80th St.
Milwaukee, Wis.—J. Linc Kern Co., 799 N. Milwaukee St.
Milwaukee, Wis.—Jos. T. Ryerson & Son, Inc., 500 S. 88th St.
Minneapolis, Minn.—Keelor Steel, Inc., 909 Ninth St., S. E.
Nashville, Tenn.—Vernon S. Tupper Co., Tuck Bldg.
New Orleans, La.—Service Supply & Eng. Co., 1048 Constance St.
Oklahoma City, Okla.—Oldfield Specialty Distributors, 525 S. E. 29th
Omaha, Neb.—Frank Tapy, 7201 Minne Lusa
Philadelphia, Pa.—Electrical Distributors Co., Penn Square Bldg.
Philadelphia, Pa.—Jos. T. Ryerson & Son, Inc., 5200 Grays Ave.
Pittsburgh, Pa.—Jos. T. Ryerson & Son, Inc., Arch St. & Bell Ave.
Pittsburgh, Pa.—Wenz Electric Sales, 3255 W. Liberty Ave.
Portland, Ore.—John C. Laing, 435 N. Tillamook
St. Louis, Mo.—Vernon L. Goedecke Co., Inc., 4101 Clayton Ave.
St. Louis, Mo.—Jos. T. Ryerson & Son, Inc., 5 Clinton St.
San Francisco, Calif.—A. M. Pauli Co., 509 Sixth St.
Seattle, Wash.—Jos. T. Ryerson & Son, Inc., 1200 4th Ave. S.
Sioux Falls, S. D.—Egger Steel Co., 909 S. 7th Ave.
Spokane, Wash.—Jos. T. Ryerson & Son, Inc., North 207 Freya St.
Tulsa, Okla.—Charles Wheatley Co., 414 S. Detroit Ave.
Wallingford, Conn.—Jos. T. Ryerson & Son, Inc., 780 N. Colony Rd.
Washington, D. C.—Lynch, Wilde and Co., Suite 811 DuPont Circle
Wexford, Pa.—Frank G. Alston Co., R. D. #1

Montreal, Que., Canada—Marine Industries Ltd., 1405 Peel St.

DRI-MITE CO.
100 W. Chicago Ave., Chicago 10, Ill.
**See ad page 70.

DUNN PRODUCTS
1218 W. Madison St., Chicago 7, Ill.

DUO-SAFETY LADDER CORP.
513 W. 9th Ave., Oshkosh, Wis.

DU PONT DE NEMOURS, E. I., & CO., INC.
Wilmington 98, Del.
**See ad pages 51 and 167.

Branch Offices:

Offices in all principal cities.

EAGLE MANUFACTURING COMPANY
25th & Charles Sts., Wellsburg, West Virginia
**See ad page 253.

EAGLE-PICHER CO., THE
American Bldg., Cincinnati 1, Ohio

Branch Offices:

Chicago 2, Ill.—1 N. LaSalle St.
Cincinnati 1, O.—900 American Bldg.
Florence (Northampton) Mass.—11 Winslow Ave.
New York 17, N. Y.—420 Lexington Ave.
Painesville, O.—130 Lusard St.
Plymouth, Mich.—561 Deer St. (P. O. Box 195)
St. Louis 3, Mo.—3545 Lindell Blvd.

EASTERN SAFETY EQUIPMENT CO., INC.
25-09 36th Ave., Long Island City 6, N. Y.

EASTMAN KODAK CO.
343 State St., Rochester 4, N. Y.

ECONOMY ENGINEERING CO.
4501-4523 W. Lake St., Chicago 24, Ill.
**See ad page 62.

EDMONT INC.
1205 Walnut St., Coshocton, Ohio
**See ad page 159.

Branch Offices:

Pasadena, Calif.—42 San Gabriel Blvd.

ELASTICONE DIVISION
Central Safety Equip. Co.
6601 Marsden St., Philadelphia 35, Pa.

Distributors:

Chicago 39, Ill.—Universal Safety Equip. Co., 5115 W. Diversey
City of Industry, Calif.—Die Supply Div., E. W. Bliss Co., 13280 E. Temple Ave.
Cleveland 11, Ohio—Strong Carlisle & Hammond Co., 11770 Berea Rd.
Detroit 2, Mich.—Boyer-Campbell Co., 801 W. Baltimore
South Bend, Ind.—H. W. Hehl Co., 2909 S. Michigan

ELECTRIC STORAGE BATTERY CO., THE
Industrial Market Division
P. O. Box 5723, Philadelphia 20, Pa.
**See ad page 252.

Branch Offices:

Atlanta 10, Ga.—1246 Allene Ave. S. W.
Chicago 9, Ill.—5335 Southwestern Blvd.
Cincinnati 6, Ohio—920 E. McMillan St.
Cleveland 14, Ohio—2225 Hamilton Ave.
Dallas 1, Tex.—2133 McKinney Ave.
Detroit 27, Mich.—14065 Schaefer Hwy.
Kansas City 23, Mo.—129 S. Belmont Blvd.
Los Angeles 15, Calif.—1043 S. Grand Ave.
Medford 55, Mass.—315 Mystic Ave.
Minneapolis 3, Minn.—1750 Hennepin Ave.
New Orleans 12, La.—408 Civic Center Bldg.
New York 36, N. Y.—25 W. 43rd St.
Philadelphia 20, Pa.—5675 Rising Sun Ave.
Pittsburgh 12, Pa.—2242 California Ave.
St. Louis 10, Mo.—5120 Northrup Ave.
San Francisco 24, Calif.—61 53rd St.
Seattle 1, Wash.—500 Wall St.
Syracuse 2, N. Y.—217 Montgomery St.
Washington 16, D. C.—4000 Albemarle St. N. W.

ELECTRO-ALARM SAFETY DEVICES
745 N. Pleasant Ave., Fresno 5, Calif.

Distributors:

Baltimore 3, Md.—Industrial Service Co., P. O. Box 53
Buffalo 13, N. Y.—American Allsafe Co., Inc., 1245 Niagara Street
Chicago 6, Ill.—McMaster-Carr Supply Co., 640 W. Lake St., Canal Sts.
Honolulu 1, Hawaii—American Factors, P. O. Box 3230
Kansas City 8, Mo.—Edcor Safety Equipment Co., 900 West 20th St.
Minneapolis 20, Minn.—Bement-Cahill Equip. Co., 7900 Irving Ave., S.
Saginaw, Mich.—Huebner Machinery & Supply Co., 800 South Water St.
St. Louis 18, Mo.—Weber Fire & Safety Equip. Co., 2737 Gravois Ave.

Montreal 1, Quebec, Canada—International Safety Supply, Inc., 132 St. James Street, West, Room 202
Winnipeg 10, Manitoba, Can.—Prairie Equip. & Radiators Ltd., 310 Burnell St.
Sheffield, England—Thomas W. Ward, Ltd., P. O. Box 141

ELECTRO POWERPACS INC.
5 Hadley St., Cambridge 40, Mass.

ELLIOTT SERVICE CO., INC.
30 N. MacQuesten Pkwy., Mt. Vernon, N. Y.
**See ad page 289.

ELLWOOD SAFETY APPLIANCE CO.
225 Sixth St. NSC, Ellwood City, Pa.
**See ad page 181.

Distributors:

Akron 2, O.—Acme Safety Products Co., 387 Storer Ave.
Atlanta 5, Ga.—Ben Meadows Co., 315 Pharr Rd., N. E.
Baltimore 3, Md.—Carey Machinery & Supply Co., 3501 Brehms
Birmingham, Ala.—Safety Engineering & Supply Co., Inc., 617 N. 10th St.

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Brooklyn 17, N. Y. –Pulmosan Safety Equip. Co., 644 Pacific St.
Buffalo 13, N. Y. –American Allsafe Co., 1245 Niagara St.
Buffalo 20, N. Y. –Steinwachs' Safety Supply, 1573 S. Park Ave.
Charleston 4, W. Va. –Industrial Safety Supply Co., 5518 MacCorkle
Chattanooga, Tenn. –C. D. Genter Co., 2109-11 Broad St.
Chicago 6, Ill. –McMaster-Carr Supply Co., 640 W. Lake St.
Chicago 10, Ill. –Protective Equip. Inc., 634 Orleans St.
Chicago 39, Ill. –Universal Safety Equip. Co., 5115 W. Diversey Ave.
Cincinnati 25, O. –Orr Safety Equip. Co., 2853 Colerain Ave.
Cleveland 3, O. –Safety Clothing & Equip. Co., 1990 E. 69th St.
Dayton 2, O. –Dayton Safety Supply Co., 11 Longworth St.
Detroit, Mich. –Boyer-Campbell Co., 601 W. Baltimore Ave.
East Chicago, Ind. –Ellis Safety Products Co., 3450 Michigan Ave.
East Orange, N. J. –E. H. Notte Safety Appliances, 340 N. Park St.
East Orange, N. J. –New Jersey Safety Equip. Co., 299 Park Ave.
Fernandina, Fla. –Fernandina Hdw. Co., 204 Atlantic Ave.
Honolulu, Hawaii–Gaspro Ltd., 458 Kuwili St.
Houston 6, Texas–Guardian Safety Equip. Co., 200 Sandman
Jackson, Miss. –Forestry Suppliers Inc., P. O. Box 8096, Battlefield
Knoxville, Tenn. –Safety Equip. Distributing Co., 832 W. Main Ave.
La Grange, Ga. –Safety Equip. Supply Co., 104 King St.
Lutherville, Md. –R. J. Nicholson Co., Falls Rd. nr. Seminary
Memphis, Tenn. –Clement Safety Equip. Inc., 720 S. Third St.
Milwaukee, Wis. –Nordberg Mfg. Co., 3073 S. Chase Ave.
Milwaukee 14, Wis. –Pagel Safety Products, Inc., 4611 W. National
Nashville 4, Tenn. –Smalling & Co., 604 Demonbreun St.
Newark 4, N. J. –Standard Safety Equip. Co., 604 Broadway
Orange, N. J. –Cipco Safety Products, Co., 400 S. Jefferson St.
Palatine, Ill. –Standard Safety Equip. Co., 431 N. Quentin Rd.
Philadelphia, Pa. –Albert W. Pendergast, Safety Equip. 6913 Tulip
Philadelphia 50, Pa. –General Scientific Equip. Co., 7516 Limekiln
Philadelphia 4, Pa. –Guardian Safety Equip. Co., 214-216 S. 45th St.
Philadelphia 33, Pa. –Industrial Products Co., 2820 N. 4th St.
Peoria 5, Ill. –Standard Industrial Products Co., 3527 W. Farmington
Pittsburgh, Pa. –Mine Safety Appliances Co., 201 N. Braddock Ave.
Pittsburgh 19, Pa. –Safety First Supply Co., 425 Magee St.
Pittsburgh, Pa. –Somers, Fitler & Todd Co., 325 Fort Pitt Blvd.
Pittsburgh 33, Pa. –Williams & Co., 901 Penna. Ave.
Portland, Ore–Sanderson Safety Supply Co., 935 S. E. Hawthorne Blvd.
Providence 3, R. I. –Jas. E. Tierney, 131 Washington St.
Queens, N. Y. –W. S. Wilson Corp., P. O. Box 218 Sunnyside Sta.
St. Louis 2, Mo. –M. A. Bell Co., 217 Lombard St.
St. Louis 1, Mo. –Pulmosan Safety Equip. Co., 1007 Washington Ave.
St. Louis, Mo. –Safety, Inc., 3230 Olive St.
St. Paul 4, Minn. –Continental Safety Equip. Inc., 1551 Selby Ave.
San Francisco 7, Calif. –Brenton Equip. Co., 374 Brannan St.
Sausalito, Calif. –E. D. Bullard Co., 2680 Bridgeway
Seattle 1, Wash. –Safety & Supply Co., 119 Blanchard St.
Youngstown, O. –Malmur Safety Products Co., 25 W. Hylda St.
Youngstown, O. –Youngstown Safety Supply Co., 1144 Meadowbrook

EMBLEM & BADGE MFG. CO.
68 Pine St., Providence, R. I.
**See ad page 291.

EMBOSOGRAF CORPORATION OF AMERICA
38 West 21st St., New York 10, N. Y.

EMERSON CO., J. H.
22 Cottage Park Ave., Cambridge 40, Mass.
**See ad page 276.

Representatives:

Arlington, Mass. –C. E. Smith, 31 Buena Vista Rd.
Columbia, S. C. –W. E. Berne, 829 Leesburg Rd.
Honolulu 3, Hawaii–Von Hamm-Young Co., Drug Dept., King & Bishop Sts.
Kansas City 41, Mo. –James E. Rogers, P. O. Box 1493
Massapequa Pk., N. Y. –A. S. Valente, 63 Harbor Lane
Oakland 11, Calif. –L. N. Curtis & Sons, 4133 Broadway
Oak Park, Ill. –Paul Gebhard, 8 Elizabeth Ct.
Pasadena, Calif. –Robert E. Lighter, P. O. Box 983
Salt Lake City, Utah–L. N. Curtis & Sons, 432 W. Third South
Seattle 9, Wash. –L. N. Curtis & Sons, 1108 Westlake Ave. N.
Villanova, Pa. –James E. Kidd, 629 Spruce Lane

Canadian Distributors:

Calgary, Alberta–Ingram & Bell, Ltd., 2032 10th Ave., S. W.
Montreal, Que., Canada–Ingram & Bell, Ltd., 4664 St. Catherine St.
Toronto 2B, Ont., Canada–Ingram & Bell, Ltd., 256 McCaul St.
Vancouver, B. C., Canada–Ingram & Bell, Ltd., 661 Hornby St.
Winnipeg, Man., Canada–Ingram & Bell, Ltd., 201 Kennedy St.

Export:
New York 19, N. Y. –Southern Oxygen Co., 3 W. 57th St.

ERELL MANUFACTURING CO.
Plasti-Guard Products
1243 So. Wabash Ave., Chicago 5, Ill.

ERICSON MANUFACTURING COMPANY, THE
1660 Hayden Avenue, Cleveland 12, Ohio

Distributors:

Philadelphia, Pa. –Industrial Products Co., 2820 N. 4th St.

FABRIKO, INC.
Mill St., Green Lake, Wis.

FAIRBANKS CO., THE
393 Lafayette St., New York 3, N. Y.

Branch Offices:

Boston 10, Mass. –520 Atlantic Ave.
Chicago 8, Ill. –2600 S. Throop St.
New York 3, N. Y. –393 Lafayette St.
Pittsburgh 22, Pa. –15 Stanwix St.
Rome, Ga. –202 Division St.

FALCON ALARM COMPANY
283 Broad St., Summit, N. J.
**See ad page 255.

Distributors:

Atlanta, Ga. –C. M. Allen Co., 2989 N. Fulton Dr., N. E.
Birmingham 10, Ala. –Wm. H. Mills III, 201 Fern St.
Birmingham, Mich. –Robert Page, 2468 Manchester
Bloomfield, N. J. –Buck International Co., Box 46 Brookdale Sta.
Brielle, N. J. –Charles Roser, Scott Rd.
Charlotte 9, N. C. –Thomas Patterson, 3045 Northhampton Dr.
Chicago 41, Ill. –J. Farkas & Assoc., 5415 W. Eddy St.
Dallas, Tex. –Kantenberger Co., 711 Reverchon Dr.
Hammond, Ind. –Pinder Instrument Co., 5305 Hohman Ave.
Huntington, W. Va. –E. A. Sigler, 311 Hines Bldg.
Kansas City 11, Mo. –Hinds and Assoc., 3405 Main St.
Kingsport, Tenn. –Charlie Palmer, Box 627
Memphis 17, Tenn. –Engineered Products Co., 4385 Janice Dr.
Minneapolis, Minn. –J. N. Johnson Co., 204 N. Washington Ave.
New York 38, N. Y. –Mc Intosh Equip. Corp., 15 Park Rd.
Orlando, Fla. –Charles R. Lemons, 4927 W. Concord Ave.
Pasadena, Calif. –Carkeek Eng. Co., Box 1147 M
Philadelphia 31, Pa. –D. A. McQuaide, 3720 Mimi Circle
Plainfield, Ill. –John T. Showerman, Box 321
Rock Island, Ill. –Harold D. Ziel, 1713-29th St.
Sausalito, Calif. –Aladdin Corp., 3030 Bridgeway
Toledo 13, Ohio–Paul A. Fee, 2060 Manfield Rd.
Tucson, Ariz. –Grinnell Fire Fight Equip., 316 E. 6th St.

FASHION SEAL UNIFORMS
63 New York Ave., Huntington, N. Y.
**See ad page 154.

FEDERAL FLOORING CORP.
82 W. Dedham St., Boston 18, Mass.

Branch Offices:

New York 17, N. Y. –60 E. 42nd St.

FEDERAL SIGN AND SIGNAL CORP.
13625 S. Western Ave., Blue Island, Ill.
**See ad page 244.

Branch Offices:

New York, N. Y. –551 Fifth Ave.

Distributors:

Boston 10, Mass. –Blair H. Parker, 610 Atlantic Ave.
Denver, Colo. –Gregg N. Cloos, 977 Jackson St.
Detroit 7, Mich. –Moore Meigs, 1411 E. Jefferson Ave.
Los Angeles 13, Calif. –Payne & Sloan, Inc., 1101 E. 5th St.
Metairie, La. –Frieshon & Belson, 715 Clearview Dr., P. O. Box 665
Pittsburgh 34, Pa. –Berger & Martin, Inc., P. O. Box 10353
Portland 14, Ore. –Bruce-Emmett Co., 630 S. E. Alder St.
San Francisco 7, Calif. –F. M. Nicholas Co., 72 Townsend St.
Seattle 4, Wash. –Bruce-Emmett Co., 1016 First Ave., So.

FENDALL COMPANY
2222 W. Diversey, Chicago 47, Ill.

Distributors:

Avoca, N. Y. –Robin W. Adair Co., Inc.
Baltimore, Md. –R. J. Nicholson Co., P. O. Box 5333
Beaumont, Tex. –Industrial Optical Co., 1435 Calder
Birmingham 4, Ala. –Industrial Safety Supply Co., 1727 Huntsville Rd.
Brookhaven, Ga. –Barrington Safety Equip. Co., P. O. Box 9979
Buffalo, N. Y. –Protective Equip. Supply Co., 1270 Broadway
Charleston 4, W. Va. –Industrial Safety Supply Co., 5518 MacCorkle Ave., S. E.
Cleveland 12, Ohio–Standard Glove Co., 13200 Woodworth Rd.
Dallas 14, Tex. –Settle Safety Supply Co., P. O. Box 9826
Dayton, Ohio–Standard Glove Co., 1635 Kipling Dr.
Denver, Colo. –Union Supply Co., 5460 Colorado Blvd.
Des Moines, Iowa–Iowa Safety Equip. Co., 414 12th St.
Detroit 9, Mich. –Seco Safety Products Co., 4461 W. Jefferson Ave.
East Chicago, Ind. –Ellis Safety Products Co., 3450 Michigan Ave.
East Orange, N. J. –Notte Safety Appliances Co., 340 N. Park
Flint, Mich. –Seco Safety Products Co., 419 Grand Traverse
Indianapolis, Ind. –Safety Corp., 3702 E. Michigan St.
Kansas City, Kan. –Zink Safety Equip. Co., 1401 Fairfax Trafficway
Los Angeles 28, Calif. –American Safety Products Co., 3197 Cahuenga
Los Angeles 1, Calif. –Bennett-Bowen Co., 7779 Compton Ave.
Louisville, Ky. –A-1 Safety Supply Co., 314 E. Jacob St.
Milwaukee 14, Wis. –Pagel Safety Products, Inc., 4611 W. National Ave.
Minneapolis, Minn. –Elmer C. Peterson Co., 1527 E. Franklin
New Haven 11, Conn. –Ahern Safety Equip. Corp., 2 Eld St.
Newton Centre 59, Mass. –Hub Industrial Equip., Inc., 10 Nightingale
N. Plainfield, N. J. –M. Texier Glove Co., Highway 22 & Mountain Ave.
Oakland, Calif. –David Schmidt Co., 536 15th St.
Odessa, Tex. –Settle Safety Supply Co., 297 N. Amburgey St.
Olean, N. Y. –Ganoung's Sales & Service, East State Rd.
Paramount, Calif. –Safety Service & Supply, 15006 Paramount
Philadelphia 35, Pa. –Pendergast Safety Equip. Co., 6913 Tulip St.
Phoenix, Ariz. –Arizona Safety Shoe & Equip., 4138 N. 19th Ave.
St. Louis, Mo. –Zink Safety Equip. Co., 7440 St. Charles Rock Rd.

Montreal, Que., Canada–Levitt-Safety, Ltd., 4205 Courtral Ave.
Toronto 10, Que., Canada–Levitt-Safety, Ltd., 747 Vaughan Rd.
Winnipeg, Man., Canada–Levitt-Safety, Ltd., 889 Westminster Ave.

FENWAL INCORPORATED
Pleasant Street, Ashland, Massachusetts

Branch Offices:

Framingham, Mass. –New England District Office, P. O. Box 126
Chicago 35, Ill. –6846 W. North Avenue
Los Angeles, Calif. –111 S. Burlington Ave.

Representatives:

Albany 4, N. Y. –Carse Electric Corp., 1044 Broadway
Atlanta 24, Ga. –Applebee-Church, Inc. –1958-A Monroe Drive, NE
Bala-Cynwyd, Pa. –J. V. Calhoun Co., 349 Montgomery Ave.
Bloomfield, N. J. –R. L. Faber & Assoc., Inc., 1246 Broad St.
Buffalo 17, N. Y. –The Robert F. Lamb Co., 3407 Delaware Ave.
Charlotte 7, N. C. –W. K. Hite Co., Inc., 1236 E. Morehead St.
Cincinnati 8, Ohio–The Smysor Co., 1046 Delta Ave.
Clearwater, Fla. –J. J. Galleher Co., 617 Cleveland St., P. O. Box 1376
Cleveland 13, Ohio–Anderson-Bolds, Inc., 2032 W. 25th St.
Columbus, Ohio–Anderson-Bolds, Inc., 1720 Grace Lane
Dallas, Texas–The Gay Sales Co., Assoc., P. O. Box 8414
Davenport, Iowa–Volco Co., 215 Kahl Bldg.
Denver 2, Colo. –E. & W. Equipment Co., 2435 15th St.
Hamden, Conn. –Doonan-Wright Corp., 2311 Whitney Ave.
Hickman Mills, Mo. –C. B. Fall Co., 11201 Longview Rd.
Houston, Texas–The Gay Sales Co., Assoc., 420 Sul Ross
Indianapolis 8, Ind. –Cauchman-Conant Inc., 1400 North Illinois St.
Milwaukee 3, Wis. –Gordon Hatch Co., Inc., 531 W. Wisconsin Ave.
Minneapolis 4, Minn. –Volco Co., 831 S. 6th St.
New Orleans 19, La. –J. P. Maguire Co., 3144 Paris Ave.
Pittsburgh 21, Pa. –Earl E. Whitaker & Son, 822 Wood St. (Wilinisburg)
St. Louis, Mo. –C. B. Fall Co., 317 N. 11th St.
San Francisco 11, Calif. –Bellove Co., 420 Market St.
Seattle 44, Wash. –Seatronics Inc., 1817 Norman St.
Southfield, Mich. –Carman Adams, Inc., 17360 W. Eight Mile Rd.
Syracuse 15, N. Y. –Carse Electric Corp., P. O. Box 23
Towson 4, Md. –Thomas H. Closs Co., 21 W. Pennsylvania Ave.
Tulsa 15, Okla. –Paul King Co., 836 North Fulton

Montreal 30, P. Q., Canada–Rousseau Controls Ltd., 640 Decourcelle Street
Toronto 12, Ontario, Canada–Rousseau Controls Ltd., 2149 Yonge St.

FERNO MANUFACTURING CO.
6th & Pine Sts., Greenfield, Ohio

FERRELL MANUFACTURING CO.
123 E. Cortland St., Groton, N. Y.
**See ad page 256.

FIBRE METAL PRODUCTS CO., THE
5th & Tilghman St., Chester, Pa.
**See ad page 113.

Warehouses:

Argo, Ill. –Fibre-Metal Midwest, Inc., 7412 S. Harlem Ave., Bridgeview P. O.
Bell Gardens, Calif. –Fibre-Metal Pacific, Inc., 7332 S. Garfield Ave.
Cincinnati, Ohio–Oki Welding Supply, 1530 Walnut St.
Decatur, Ga. –Fibre-Metal Southeast, Inc., 242 Loredo Dr.
Houston, Tex. –Van Dreser & Hawkins, 5817 Clinton Dr.
Long Island City, N. Y. –Metroweld Distr., 39-11 31st St.

Toronto, Ont., Canada–Fibre-Metal, Ltd., 1773 Ave. Rd.

FINE ORGANICS, INCORPORATED
205 Main Street, Lodi, New Jersey

Branch Offices:

Arcadia, Calif. –614 S. Old Ranch Rd.
Baltimore 4, Md. –P. O. Box 6759, Towson
Birmingham, Ala. –P. O. Box 1648
Boston, Mass. –79 Milk St.
Chicago 49, Ill. –2255 E. 73rd St.
Cortland, N. Y. –P. O. Box 645
Denver 4, Colo. –1125 7th Avenue
Detroit 23, Mich. –18230 Grand River Ave.
Los Angeles, Calif. –1325 W. Venice Blvd.
Louisville 3, Ky. –427 So. 20th St.
Mobile, Ala. –163 Conti Street
New Rochelle, N. Y. –105 Melrose Drive
Oakland 12, Calif. –2205 San Pablo Ave.
San Jose, Calif. –996 N. 4th St.
Wichita, Kan. –650 E. Gilbert
Wil. 1, Del. –1071 DuPont Bldg.

Distributors:

Brooklyn 30, N. Y. –W. Sanger Green, 1379 E. 19th St.
Cleveland 20, Ohio–Aerodyne Dev. Corp., 12727 Buckeye Rd.
Houston, Texas–Sam L. Bishkin, 1803 Dallas Ave.
Jackson Heights, N. Y. –Gerd D. Sommelroggen, 89-09 32nd Ave.
Macungie, Pa. –Irwin Von Funk, P. O. Box 157
Minneapolis 6, Minn. –Viking Safety Prod., Inc., 3431 E. 25th St.
New Orleans 13, La. –Marine Sales, Inc., 429 Calliope St.
Pittsburgh 22, Pa. –Ben Ostroff, 701 Investment Blvd.
Portland, Maine–Eastern Fire Equipment, Inc., 403-405 Fore St.
Richland, Wash. –George W. Hurst Co., 72 Whitten St.
Rochester 7, N. Y. –Rochester Safety Equip. Co., 83 Howell St.
Salt Lake City, Utah–J. K. Snedden Co., 263 Virginia St.
Teaneck, N. J. –J. Weiser, 1014 Phelps Rd.
Troy, N. Y. –B. Lann Equipment Co., 22-99 5th Ave.
Waverly, Va. –Virginia-Carolina Safety Equip. Co., P. O. Box 34
Hato Rey, P. R. –Fairbank-Diversey Corp., P. O. Box 1265

FINNELL SYSTEM, INCORPORATED
2200 East Street, Elkhart, Indiana
**See ad page 45.

Branch Offices:

Ashley, Pa. –145 East Liberty St.
Atlanta, Ga. –132-10th Street
Baltimore 2, Md. –Court Square Bldg.
Beloit, Wis., P. O. Box 815
Boston 16, Mass. –441 Tremont Street
Buffalo 21, N. Y. –100 Indian Trail
Canton 8, Ohio–2414-11th St., N. W.
Carmel, Ind. –62 Bennett Road
Chicago 44, Ill. –28 N. Laramie
Cincinnati 38, Ohio–2701 Byrneside Dr.
Cleveland 14, Ohio–1420 East 24th St.
Columbus 1, Ohio–1342 Highland St.
Constantine, Mich. –R. R. 2
Dallas 2, Texas–4512 Mockingbird Lane
Denver, Colo. –1853 Arapahoe
Detroit 26, Mich. –1346 Broadway
East Hartford 8, Conn. –91 Margery Drive
Elizabeth, N. J. –963 Newark Ave.
Elizabethton, Tenn.–Route 5
Elkhart, Ind. –500 East Street
Escondido, Calif. –338 W. Seventh St.
Goshen, Ind. –613 Hackett Road
Grand Rapids 5, Mich. –3549 Briggs Blvd.
Greenville, S. C. –27 Byrd Blvd.
Hannibal, Mo. –1225 Collier Street
Hasbrouck Hgts, N. J. –306 Bell Ave.
Houston 5, Texas–1916 Albans Road
Kansas City 6, Mo. –119 Walnut
Los Angeles 6, Calif. –2996 W. Pico Blvd.
Marion, Ind. –P. O. Box 662
Meridan, Miss. –2817-8th Street

Continued on next page

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Miami 50, Fla.—1480 N. W. 2nd Ave.
Milwaukee 13, Wis., 1516 Underwood Ave.
Minneapolis 1, Minn.—5014-11th Avenue S.
Montgomery 2, Ala.—3537 Gastn Ave.
New Castle, Pa.—RFD 3, P. O. Box 101
New Orleans 24, La.—6370 Colbert Street
New York 7, N. Y.—148-160 Chambers St.
Philadelphia 8, Pa.—401 N. Broad St.
Pittsburgh 22, Pa.—413 Commonwealth Annex
Providence, Rhode Island—915 Industrial Band Bldg.
Richmond 20, Virginia—1224 W. Broad St.
Ruskin, Fla.—P. O. Box 622
St. Louis 8, Mo.—4971 Washington Ave.
San Antonio 1, Texas—2407 W. Woodlawn
San Francisco 3, Calif.—56-14th Street
Scotia 2, New York—Box 1251
Seattle 1, Washington—2490½ Second Ave.
Spokane 27, Wash.—1618 E. Providence
Springfield, Ill.—211 W. Washington St.
Toledo 4, Ohio—518 Jefferson Ave.
Walnut Creek, Calif.—2260 Tice Valley Blvd.
Washington 2, D.C.—318 Randolph Place, N. E.
Wellsville, Mo.—200 Gamma Rd.
Williamsport, Pa.—P. O. Box 614

Dealers:

Amarillo, Texas—Dodson Chemical Co., 88 Hughes St.
Charleston, W. Va.—Southern Chemical Co., 1565 Hansford St.
Davenport, Iowa—M. A. McKay Co., 228 W. Third St.
Des Moines 10, Iowa—Knott Chemical Co., 7011 Douglas
El Paso, Texas—Baron Chemical Co., Inc., 915 Texas St.
Iron Mountain, Mich.—A. A. Floor Service, 514 Carpenter Ave.
Leaside, Toronto, Ont., Can.—Dustbane Prod., Ltd., 8 Southvale Dr.
Little Rock, Ark.—Carl Finch Janitor Supply, 409 W. Capitol
London, N. W. 10, England—Finnell System, Ltd., Tudor Works, Park Royal
Louisville 2, Ky.—National Janitor Service Corp., 700 W. Main St.
Montreal 3, Quebec, Can.—Dustbane Quebec, Ltd., 5640 Franchere St.
Nashville, Tenn.—Snael Super Service, 919-12th Ave., South
Oklahoma City, Okla.—Knight Supply Co., 215 N. Western Ave.
Omaha, Neb.—Valco Products Co., 1114 Harney
Ottawa, Ontario, Can.—Dusbane Products, Ltd., P. O. Box 383, Terminal P. O. 88 Metcalfe St.
Salt Lake City, Utah—Salt Lake Hardware Co., P. O. Box 510
San Juan, Puerto Rico, Sweeting and Co., International Airport
Tulsa 6, Okla.—Oklahoma Janitor Supply Co., 831 E. 4th St.
Vancouver, B. C., Can.—Dustbane Co. of B. C. Ltd., 722 Cambie St.
Wahpeton, North Dakota—Globe Gazette Printing Co., 518 Dakota Ave.
Wichita, Kansas—Wichita Brush Co., 234 N. Main St.
Windsor, Ontario, Can.—Dustbane Products, Ltd., 1130 Janette Ave.

FIRETOX SYSTEM, INC.
P. O. Box 216, Peterborough, N. H.

Distributors:

Chicago 40, Ill.—Viking Automatic Sprinkler Co., 5520 N. Wolcott Ave.
Orange, N. J.—Natl. Associated Suppliers, Box 326

FISHER SCIENTIFIC CO.
711 Forbes Ave., Pittsburgh 19, Pa.

Branch Offices:

Chicago 51, Ill.—1458 N. Lamon Ave.
Fort Worth 1, Texas—2920 Shotts St.
Houston 1, Texas—317 Nagle St.
King of Prussia, Pa.—Gulph Rd., Rte. 23
Medford 55, Mass.—461 Riverside Ave.
Montreal 9, P. Q., Canada—8505 Devonshire Rd.
New York 14, N. Y.—633 Greenwich St.
Odessa, Texas—W. 27th & Westover St.
St. Louis 18, Mo.—2840 S. Jefferson Ave.
Silver Spring, Md.—7722 Woodbury Dr.
Toronto 3, Ont., Canada—245 Carlaw Ave.

FLAMORT CHEMICAL COMPANY, INC.
746 Natoma St., San Francisco 3, Calif.

Distributors:

Amarillo, Tex.—C. R. Thomas, 404 McMaster
Birmingham, Ala.—L. P. Harless Inc., 2627 S. 7th Ave.
Chicago, Ill.—McMaster Carr Supply Co., 640 W. Lake St. Canal Sta.
Denver, Colo.—Sanitary Specialties Co., 1441-47 Market
Dunellen, N. J.—Gold Crest Safety Equipment
Indianapolis, Ind.—The Safety Corporation, 3702 E. Michigan St.
Las Vegas, Nev.—A. G. Williams Ext. Co., 200 N. 15th St.
Memphis, Tenn.—National Theatre Supply Co., 412 S. 2nd St.
Miami, Fla.—Approved Flameproofing & Silconizing Co., 355 N. W. 54th St.
Milwaukee, Wis.—Arthur F. Bendlin & Son, 4311 N. 91st St.
Oklahoma City, Okla.—Bill Story Fire & Safety Co., 1521 W. Reno
Phoenix, Ariz.—AAA Fire Extinguisher Co., 5150 W. Camelback Rd.
Rapid City, S. D.—Industrial Sprinkler Corp., 418-6th St.
Reno, Nevada—Nevada Fire Extinguisher Co., 2600 Plumas St.
Roanoke, Va.—Skyline Paint & Hardware Inc., 1255-3rd St.
Salt Lake City, Utah—Universal Safety & Fire, Equip. Co., Inc., 727 S. W. Temple
Seattle, Wash.—Parker Paint Sales Co., 1226 Westlake Ave. N.
Spokane, Wash.—Appleton Paint Co., 32 W. 2nd St.
Tucson, Ariz.—Semon Industrial & Weld. Supply Co., 27 Mikes Pike
Yakima, Wash.—Cascade Fire Equip. Co., 401 S. 3rd St.

Vancouver, B. C., Canada—Harold M. Barr Ltd., 33 E. 3rd Ave.

FLASH MFG. CO.
169 Murray St., Newark 5, N. J.
**See ad page 225.

FLASH SHIELD PRODUCTS CO.
216 No. Washtenaw Ave., Chicago 12, Ill.

Branch Offices:

Greensboro, N. C.—Langdon Sales Co., Box 2490
Los Angeles 11, Calif.—Ray Hammel Co., 2720 S. San Pedro St.

Distributors:

Chicago, Ill.—Rayco Paint Co., 2535 N. Laramie Ave.
Columbus, O.—Cincinnati Sign Supply Co., Inc., 1855 Pansburg Ave.
St. Paul 14, Minn.—Midwest Sign Supply Co., 2428 University Ave.

FLENTS PRODUCTS COMPANY, INC.
103 Park Avenue, New York City 17, N. Y.
**See ad page 100.

Distributors:

Birmingham, Ala.—Safety Engineering & Supply Co., 617 No. 10th St.
Chattanooga, Tenn.—Industrial Supply Co.
Chicago, Ill.—Standard Safety Equip. Co., 232 W. Ontario St.
Chicago, Ill.—Universal Safety Equipment Co., 5115 W. Diversey Ave.
Cincinnati, O.—Orr Safety Supply Co., 2853 Colerain Ave.
Cleveland, O.—Safety Clothing & Equip. Co., 1990 E. 69th St.
Dayton, Ohio—Dayton Safety Supply, 316 Longworth St.
Knoxville, Tenn.—Safety Equip. Dist. Co., 830-832 W. Main St.
Los Angeles, Calif.—Dickson Safety Products Co., 12921 W. Washington Blvd.
Los Angeles, Calif.—Thompson Safety Equip. Co., 4907 W. Pico Blvd.
Memphis, Tenn.—Clement Safety Equip., Inc., 720 So. Third St.
Milwaukee, Wis.—Pagel Safety Products Inc., 4615 W. National Ave.
Monterey Park, Calif.—Charles E. Morton Co., 447 W. Garvey Ave.
New Orleans, La.—Industrial Fire & Safety, Inc., 1739 Baronne St.
Pittsburgh, Pa.—Safety First Supply Co., 425 Magee St.
Pittsburgh, Pa.—Williams & Company, Inc., 901 Pennsylvania Ave.
Rochester, N. Y.—Rochester Safety Equipment Co., 83 Howell St.
St. Louis, Mo.—Pulmosan Safety Equip. Corp., 1007 Washington Ave.
Seattle, Wash.—Safety & Supply Co., 115 Blanchard St.
Tulsa, Okla.—Guardian Safety Equip. Co., 1742 Main St.

Sudbury, Ontario—Commercial Safety Aids Co., 400 Montague St.
Toronto, Canada—Levitt-Safety Ltd.
Toronto, Canada—Safety & Supply Co., 214 King St. East

FLORIDIN CO.
P. O. Box 989, Tallahassee, Fla.

Branch Offices:

Dallas, Texas—Meadows Bldg.
New York City, N. Y.—375 Park Ave.
St. Louis, Mo.—8000 Bon Homme

FLUID POWER INC.
663 Aurora Rd., Macedonia, Ohio

FRANKLIN RESEARCH CO.
5134 Lancaster, Ave., Phila. 31, Pa.

Branch Offices:

Chicago, Ill.—1500 S. Western Ave.
Cincinnati, O.—1326 Tennessee Ave.
Detroit, Mich.—4765 Bellevue Ave.
Kansas City, Mo.—3102 Troost Ave.
Los Angeles, Calif.—711 S. Vermont St.
New York, N. Y.—7604 Empire State Bldg.
Philadelphia, Pa.—5134 Lancaster Ave.

FRANK MFG. CO., INC.
Box 68, Kentland, Ind.
**See ad page 276.

FROMMELT INDUSTRIES INC.
290 Main St., Box 419, Dubuque, Iowa
**See ad page 189.

Branch Offices:

Atglen, Pa.—P. O. Box 43
Brooklyn 15, N. Y.—451 6th Ave.
Ft. Worth 18, Tex.—1345 W. Hurst Blvd., Rm. 108
Royal Oak, Mich.—1516 W. Webster Rd.

Distributors:

Atlanta, Ga.—Southeastern Safety Appliance, 285 Marietta St.
Avoca, N. Y.—Robin W. Adair Co.
Billings, Mont.—Big Horn Supply Inc., 2116 3rd Ave.
Buffalo, N. Y.—American Allsafe Co., 1245 Niagara
Buffalo, N. Y.—Steinwachs's Safety Supply, 1571 South Park
Baltimore, Md.—Carey Machinery & Supply, Box 206
Baton Rouge, La.—Louisiana Welding Supply, 1931 Plank Rd.
Birmingham, Ala.—Safety Engr. & Supply Co., P. O. Box 1648
Boston, Mass.—General Equip. Corp., 261 Franklin
Bridgeport, Conn.—Bridgeport Industrial Prod., 22 Cross St.
Charleston, W. Va.—Safety First Supply, 1106 Quarrier
Chicago, Ill.—Universal Safety Equip., 5115 W. Diversey
Cleveland, Ohio—Safety First Supply Co., 4251 W. 35th
Cleveland, Ohio—Strong Carlisle & Hammond, 11770 Berea Rd.
Detroit, Mich.—Averill Equip. Co., 19225 Conant
Detroit, Mich.—Boyer-Campbell Co., 6540 St. Antoine
East Orange, N. J.—Notte Safety Appliance, 340 N. Park
Fort Wayne, Ind.—Safety Equip. & Supply, 1724 W. Main St.
Green Bay, Wis.—Vorpahl Co., Box 847
Honolulu, Hawaii—Gaspro Ltd., Box 2456
Houston, Tex.—Guardian Safety Equip. Co., 1915 Westheimer
Kalamazoo, Mich.—Safety Services, Inc., 1903 W. Main
Kansas City, Mo.—Safety Inc., 17th 31st St.
Kansas City, Kan.—Zink Safety Equip. Co., 1401 Fairfax Trafficway
Knoxville, Tenn.—Safety Equip. Dist. Co., 832 W. Main
Indianapolis, Ind.—Safety Corporation, 3722 E. Michigan
Long Island, N. Y.—W. S. Wilson Corp., 47-50 38th St.
Louisville 10, Ky.—Orr Safety Equip. Co., 1551 S. 10th St.
Memphis, Tenn.—Clement Safety Equip. Inc., 730 S. 3rd.
Milwaukee, Wis.—Universal Safety Equip., 3155 S. 7th
Minneapolis, Minn.—Viking Safety Products, 3431 E. 25th
Mobile, Ala.—Safety Engr. & Supply Co., P. O. Box 111
Newark, N. J.—Safeguard Industrial Equip., 271 Verona Ave.
Orange, N. J.—Guardian Safety Equip. Co., 400 S. Jefferson
Philadelphia, Pa.—Albert Pendergast Co., 6913 Tulip
Philadelphia, Pa.—Industrial Products Co., 2820 N. 4th
Philadelphia, Pa.—R. S. McCracken & Sons, 636 N. 13th
Philadelphia, Pa.—S. A. Cunningham Co., 2025 Trenton
Phoenix, Ariz.—Ralph H. Smith & Co., 210 S. 19th St.
Pittsburgh, Pa.—Safety First Supply, 425 Magee
Salt Lake City, Utah—Industrial Supply Co., 131 Social Hall Ave.
Sausalito, Calif.—E. D. Bullard Co., 2680 Bridgeway
Seattle, Wash.—Safety Supply Co., 119 Blanchard
Spokane, Wash.—Spokane Safety Supply Co., 219 Division
St. Louis, Mo.—Safety Inc., 3230 Olive St.
Syracuse, N. Y.—Syracuse Supply Co., 314 W. Fayette
Tampa, Fla.—Safety Equip. Co. of Fla., 9505 Florida Ave.

FROST PAINT AND OIL CORP.
1209 N. E. Tyler, Minneapolis 13, Minn.
**See ad page 47.

Distributors:

Appleton, Wis.—Schlafer Supply Co., 115 W. College Ave.
Ashland, Ore.—Fowler Engineering Sales Co., P. O. Box 162
Atlanta 7, Ga.—Guardian Safety Equip. Co., 1091 Euclid Ave. N. E.
Birmingham 5, Ala.—L. P. Harless Co., Inc., 2627—7th Ave., South
Chicago 39, Ill.—Universal Safety Equip. Co., 5115 W. Diversey Ave.
Dallas 1, Texas—Central Chemical Co., 3428-30 Commerce St.
Dallas 26, Texas—Guardian Safety Equip. Co. of Dallas, 3107 Commerce St.
Dayton 2, O.—Dayton Safety Supply, 316 Longworth St.
Detroit 34, Mich.—Averill Equip. Co., 19225 Connant Ave.
Fort Wayne 7, Ind.—Safety Equip. & Supply Co., 1724 W. Main At.
Green Bay, Wis.—Baldwin & Co., 311 Main St.
Green Bay, Wis.—Eastman Supply Co., 318-320 N. Monroe Ave.
Houston 19, Texas—Guardian Safety Equip. Co., P. O. Box 13384
Kansas City 15, Kan.—Zink Safety Equip. Co., 1401 Fairfax Trafficway
Kansas City 8, Mo.—Safety, Inc., 17th E. 31st St.
Knoxville, Tenn.—Safety Equip. Distributing Co., 830-832 W. Main Ave.
Los Angeles 3, Calif.—Guardian Safety Equip. Co., 7223 So. Main St.
Minneapolis 4, Minn.—Duncan Co., 1300 So. 4th St.
Milwaukee 16, Wis.—Kennedy-Ingalls, Inc., 3735 N. 35th St.
Milwaukee 14, Wis.—Pagel Safety Products, Inc., 4615 W. National
New Haven 11, Conn.—Abern Safety Equip. Corp., 2 Eld St.
Orange, N. J.—Ipco Safety Prod. Co., 400 So. Jefferson
Peoria, Ill.—Standard Industrial Prod. Co.—3537 W. Farmington Rd.,
Philadelphia 4, Pa.—Guardian Safety Equip. Co., 214-16 So. 45th St.
Pittsburgh 30, Pa.—Somers, Fitler & Todd Co., P. O. Box 1528
St. Louis 3, Mo.—Safety, Inc., 3230 Olive St.
St. Paul 4, Minn.—Continental Safety Equip. Co., 1551 Selby Ave.
Salt Lake City 11, Utah—Universal Safety & Fire Equip. Co., 727 W. Temple, P. O. Box 1587
San Mateo, Calif.—Guardian Safety Equip. Co., 220—3rd Ave.
Toledo 12, O.—Harry C. Kirchenbauer Paint & Supply Co., 936 Sylvania Ave.
Toronto 1, Ont., Canada—Safety Supply Co., 214 King St. East
Tulsa 4, Okla.—Guardian Safety Equip. Co., 1742 So. Main
Vicksburg, Miss.—O'Neill-McNamara Hdw. Co., P. O. Box 19

FULTON ASPHALT CO.
165 W. Wacker Dr., Chicago 1, Ill.

FYREPEL PRODUCTS, INC.
Box 505, Newark, Ohio
**See ad page 170.

Branch Offices:

Hopewell, N. J.—Box 117

Distributors:

Avoca, N. Y.—Robin W. Adair Co.
Baltimore 3, Md.—Carey Machinery & Supply Co., 3501 Brehms Lane
Billings, Mont.—Big Horn Supply, Inc., 2116 Third Ave.
Chicago, Ill.—Universal Safety Equip. Co., 5115 W. Diversey
Cincinnati, Ohio—Williams & Co., 7640 Reinhold Dr.
Clearwater, Fla.—Car Mad Equipment Co., 608 Palm Ave.
Cleveland, Ohio—Williams & Co., 3700 Perkins Ave.
Columbus, Ohio—Williams & Co., 900 Williams Ave.
Denver, Colo.—Union Supply Co., 5460 Colorado Blvd.
Detroit, Mich.—Seco Safety Products, 4461 W. Jefferson
East Orange, N. J.—Notte Safety Appliances Co., 308 Main St.
Honolulu, Hawaii—The Lynch Co., Box 540
Houston 5, Tex.—Ballard Distributing Co., 2423 Times Blvd.
Knoxville, Tenn.—Safety Equipment Distributors, 832 W. Main Ave.
Lafayette, La.—Delta Fire & Safety Co.
Los Angeles, Calif.—Guardian Safety Equip. Co., 7223 S. Main St.
Newark, Ohio—David T. McLaughlin, Box 503
New Haven, Conn.—Abern Equip. Co., 2 Eld St.
Phoenix, Ariz.—Thunderbird Sales, Inc., 2255 W. McDowell
Pittsburgh, Pa.—Williams & Co., 901 Pennsylvania Ave.
Providence, R. I.—James E. Tierney, 131 E. Washington
Salt Lake City, Utah—Universal Safety & Fire Equip. Co., 727 S. W. Temple
San Francisco, Calif.—Brenton Equip. Co., 374 Brannan St.
Spenard, Alaska—National Supply Co., Box 3876
St. Louis, Mo.—Reiss Equipment Co., 1417 Tower Grove
St. Paul, Minn.—Continental Safety Equip. Co., 1551 Selby St.
Toledo, Ohio—Williams & Co., 946 Kane St.
Tulsa, Okla.—Guardian Safety Equip. Co., 1742 S. Main

FYR-FYTER CO., THE
221 Crane St., Dayton 2, O.
**See ad page 239.

Branch Offices:

Atlanta, Ga.—1050 Northside Dr., N. W.
Boston, Mass.—251 Vassar St.
Chicago, Ill.—2750 West 35th St.
Dallas, Texas—8115 Sovereign Row
Toronto, Ontario, Canada—136 Manitoba
Dayton, Ohio—221 Crane
Detroit, Mich.—187 W. Grand Blvd.
Los Angeles, Calif.—122 Glendale Blvd.
Newark, N. J.—U. S. Highway No. 1
New York, N. Y.—2 West 46th St.
Philadelphia, Pa.—6808 North Franklin St.
Portland, Ore.—626 S. E. Stark St.
San Francisco, Calif.—132-140 Hawthorne St.

GAMEWELL COMPANY, THE
1238 Chestnut St., Newton Upper Falls 64, Mass.
**See ad page 241.

Branch Offices:

Belleville, N. J.—P. O. Box 13
Bridgeport, Conn.—335 Fairview Ave.

Safety Products Sources

Charlotte, N. C. –5632 Murrayhill Rd.
Columbus 15, Ohio–550 S. High St.
Dallas, Tex. –2909 N. Maple Ave.
Decatur, Ga. –3149 Gay Drive
Detroit 35, Mich. –18954 James Couzens
Des Plaines, Ill. –1479 Ellinwood St.
Downingtown, Pa. –154 Whiteland Hunt Rd.
Geneva, N. Y. –444 Exchange St., P. O. Box 626
Indianapolis, Ind. –4227 N. College Ave.
Minneapolis 4, Minn. –2 East Franklin Ave.
New York 17, N. Y. –Rm. 1708, 420 Lexington Ave.
Oswego, Ore. –27 S. State St.
Pittsburgh, Pa. –300 Mt. Lebanon Blvd.
San Leandro, Calif. –1099 MacArthur Blvd.
South Gate, Calif. –8479 California Ave.
Tallahassee, Fla. –919 Deloras Dr.

GARDNER-DENVER COMPANY
Gardner Expressway, Quincy, Illinois

District Offices:

Atlanta 9, Ga. –1114 W. Peachtree St., N. W.
Birmingham 4, Ala. –817 Green Springs Highway, P. O. Box 6042
Broadview, Ill. –2535 S. 25th Ave.
Buffalo 26, New York–4532 Bailey Ave.
Butte, Montana–215 East Park Street
Cleveland 11, Ohio–3088 W. 117th St.
Corpus Christi, Texas–P. O. Box 5057, 4522 Baldwin Blvd.
Dallas 35, Texas–7125 Harry Hines Blvd., P. O. Box 35106
Denver 1, Colo–1727 East 39th Ave., P. O. Box 1020
Duluth 2, Minn. –521 East Superior Street
El Paso, Texas–1704 E. Paisano Dr., P. O. Box 981
Grand Junction, Colo. –[illegible] North Ave.
Hazelwood, Mo. –6011 N. Lindbergh Blvd.
Houston, Texas–2201 Polk Ave., P. O. Box 176
Indianapolis 27, Ind. –3957 S. Meridan
Jackson 3, Miss. –942 Bailey Ave.
Kalamazoo, Mich., 2403 Helen Ave., P. O. Box 2586
Kansas City 14, Mo. –309 West 79 Terrace
Knoxville 17, Tenn. –709 N. 5th Ave.
Lafeyette, La–1022 Auburn St.
Los Angeles 22, Calif. –7564 E. Slauson Ave.
Louisville 16, Ky. –2003 Crun's Lane, Shively, P. O. Box 38
Milwaukee 3, Wis. –Room 510, 536 W. Wisconsin Ave.
Minneapolis 20, Minn. –1701 W. 80th St.
Needham Heights 94, Mass. –65 Crawford St.
New Orleans 25, La. –7735 Edinburgh St., P. O. Box 13155
Oak Park 37, Mich. –12700 Capital Ave., P. O. Box 3735
Odessa, Texas–P. O. Box 2369, 218 West County Road
Oklahoma City, Okla. –330 Classen Terrace Bldg.
Philadelphia 40, Pa. –4309-11 Rising Sun Avenue
Pittsburgh 26, Pa. –520 McNeilly Road
Quincy, Ill. –South Front Street
Richmond 21, Va. –3917 W. Franklin St.
Salt Lake City, Utah–113 West Second South St.
San Diego 3, Calif. –1629 University Ave.
Seattle 4, Wash. –615 Eighth Avenue, South
Shreveport, La. –1500 North Market St., Roberts Center
South San Francisco–144 West Harris Ave.
Teterboro, N. J. –700 Huyler St.
Tulsa 16, Okla. –6746 East 11th St., P. O. Box 5068, Donaldson Sta.
Wallace, Idaho–Samuels Hotel Bldg., 408 7th St., P. O. Box 788
Washington 11, D. C. –6200 Chillum Pl., N. W.
Wichita, Kansas–6631 East Kellogg, Suite 213

Edmonton, Alberta–14415-114 Avenue
Kirkland Lake, Ontario–P. O. Drawer No. 756
Moncton, N. Brunswick–East Main St., P. O. Box 475
Montreal 28, Quebec–5825 St. James Street, West
Nelson, B. C. –745 Baker St.
Sept-Isles, Quebec–295 rue Joliette, P. O. Box 2320
Sudbury, Ontario–445 LaSalle Blvd., East, P. O. Box 936
Toronto 16, Ontario–14 Curity Avenue
Vancouver 9, B. C. –1775 Pine St.
Winnipeg 3, Manitoba–1370 Sargent Ave.
Mexico City 6, D. F. Mexico–Apartado 575, Versalles y Marsella 8

GEBHARDT, A. L., CO.
416 N. Water St., Milwaukee 1, Wis.

GEIGY AGRICULTURAL CHEMICALS
Division of Geigy Chemical Corporation
Saw Mill River Road, Ardsley, New York

GELMAN INSTRUMENT COMPANY
Box 86, Chelsea, Michigan

GENERAL AUTOMATION CORPORATION
40-66 Lawrence Street, Flushing 54, New York

Distributors:

Philadelphia, Pa. –John Caulfield, 7115 Cottage Street
Toronto, Ont., Canada–Prenco Progress & Eng. Co., 172-74 Stafford

GENERAL BANDAGES, INC.
8300 Lehigh Ave., Morton Grove, Ill.

Distributors:

Avoca, N. Y. –Robin W. Adair
Boston, Mass. –A. E. Halperin Co.
Burlington, Iowa–Security Laboratories
Chicago, Ill. –W. V. MacGill Co.
Chicago, Ill. –National Medical Supply
Chicago, Ill. –Universal Safety Equipment
Cincinnati, Ohio–E. W. Bodell Co.
Dallas, Texas–Engineering Supply Co.
Detroit, Mich. –The G. A. Ingram Co.
East Orange, N. J. –New Jersey Safety Equip. Co.
Fort Wayne, Ind. –Safety Equipment & Supply Co.
Hartford Conn. –Ralph Gordon Kenneson Co.
Kalamazoo, Mich. –Safety Services, Inc.
La Grange, Ga. –Safety Equipment Supply Co.
Los Angeles, Calif. –The Buell W. Nutt Co.
Milwaukee, Wisc. –Langer Laboratories
Minneapolis, Minn. –Joseph E. Dahl
Neenah, Wisc. –Mace Laboratories
Orange, N. J. –IPCO Safety Products Co.
Philadelphia, Pa. –General Scientific Equipment Co.
Roanoke, Va. –The Wrights
St. Louis, Missouri–University Drug Co.
St. Louis, Missouri–Van Sickle Co.
Seattle, Washington–Northwest Medical Supply
Somerville, N. J. –Dorsey Safety Supply

GENERAL CHEMICAL DIVISION
Allied Chemical Corporation
40 Rector Street, New York 6, New York
**See ad page 257.

Branch Offices:

Atlanta, Ga. –1151 Chattahoochee Ave., N. W.
Birmingham, Ala. –642 Third Ave. N.
Charlotte 1, N. C. –818 Tuckaseege
Chicago 54, Ill. –Rm. 430 Merchandise Mart.
Cleveland, Miss. –P. O. Drawer 952
Denver, Colo. –1271 Bayaud Avenue
Houston, Texas–923 South 67th St.
Kalamazoo, Mich. –513 E. Paterson St.
Los Angeles, Calif. –2999 West Sixth St.
Minneapolis, Minn. –2020 Broadway St. N. E.
New York, N. Y. –40 Rector Street
Orlando, Fla. –211 E. Robinson Ave.
Philadelphia, Pa. –12 South 12th St.
Providence, R. I. –58 Weybosset St.
St. Louis, Mo. –411 North Seventh St.
San Francisco, Calif. –235 Montgomery St.
Seattle, Wash. –1326-5th Ave.

GENERAL FIRE EXTINGUISHER CORP.
6740 Washington Blvd., Culver City, Calif.

Branch Offices:

Atlanta 3, Ga. –360 Whitehall St., S. W.
Chicago 41, Ill. –4444 W. Irving Park Rd.
Dallas 7, Texas–1506 N. Industrial Blvd.
Detroit 11, Mich. –2620 E. Grand Blvd.
Houston 23, Texas–3401 Telephone Rd.
Long Island City 1, N. Y. –31-31 Thomson Ave.
Philadelphia 11, Pa. –4714-16 N. Second St.
San Francisco 3, Calif. –127 10th St.
Seattle 3, Wash. –4025 Stoneway

GENERAL PRECISION, INC.
GPL Division
63 Bedford Rd., Pleasantville, N. Y.

Branch Offices:

Alamogordo, N. M. –Kittleson Co., P. O. Box 803
Anchorage, Alaska–Effco Electronics, 320 Fifth Ave.
Colorado Springs, Colo. –Kistler Electric Co., 520 E. Colorado St.
Dallas 7, Tex. –Carver Sound Equip., 1804 Hi Line Drive
Dallas 6, Tex. –6300 N. Central Expressway
Evanston, Ill. –Illinois Electronic Systems, 1219 Howard St.
Houston 19, Tex. –Signal Engr. Co., P. O. Box 1322, 2032 Dunlavy
Indian River City, Fla. –W. A. Brown & Assoc., Inc., 201 Capron Rd.
LaJolla, Calif. –7440 Girard Ave.
New Orleans, La. –Electronic Systems, 1901 Tulane Ave.
Osseo, Minn. –Arrow Technical Sales, Box 273B-Rte. 2
Portland 9, Ore. –Don H. Burcham, Co., 510 N. W. 19th Ave.
Rome, N. Y. –115 Glen Rd., S.
Salt Lake City, Utah–Applied Engr. Products Co., 405 Felt Bldg.
Van Nuys, Calif. –7803 Lemona Ave.
Victoria, Australia–R. H. Cunningham Pty. Ltd., 8 Brenham Place
Washington 5, D. C. –777 14th St., N. W.

Belleview, Ont., Canada–The Northern Electric Co. Ltd., 250 Sidney

GENERAL SCIENTIFIC EQUIPMENT CO.
Limekiln Pike & Williams Ave., Philadelphia 50, Pa.

GENTER, C. D., CO.
2109-15 Broad St., Chattanooga, Tenn.

GENTEX CORPORATION
450 Seventh Ave., New York 1, N. Y.

Branch Offices:

Arlington, Va. –601 Arlington Trust Bldg.

GETS-A-LITE COMPANY
3865 Milwaukee Avenue, Chicago 41, Illinois
**See ad page 41.

Distributors:

Boston, Mass. –Republic Electric Supply Co., 1355 Columbus Ave.
Buffalo, N. Y. –Wehle Electric, 473-75 Ellicott St.
Cincinnati, Ohio–F. D. Lawrence, Electric Co., 217 W. 4th St.
Cleveland, Ohio–Midland Electric Co., 2125 Superior Ave.
Columbus, Ohio–McKeever Electric Co., 212 W. Grant Ave.
Dayton, Ohio–Martin Electric Co., 310 E. 2nd St.
Detroit, Mich. –Argus Supply Co., 4340 Davison
Erie, Pa. –Erie Industrial Electric Supply Co., 1502 Cherry St.
Hartford, Conn. –Allied Electric Supply Co., 417 Church St.
Indianapolis, Ind. –Safety Corp., 3740 E. Michigan St.
Kansas City 11, Mo. –Newman Mfg. Co., P. O. Box 5905
Philadelphia, Pa. –Industrial Prod. Co., 2820 N. 4th St.
Rochester, N. Y. –Wehle Electric, 304 Andrews

GEOTECHNICAL CORPORATION, THE
3401 Shiloh Road, Garland, Texas

GLENDALE OPTICAL CO., INC.
600 West Merrick Rd., Valley Stream N. Y.
**See ad page 132.

Distributors:

Distributors in all cities of the United States and Canada.

GLIDDEN COMPANY, THE
900 Union Commerce Bldg., Cleveland 14, Ohio

GLOBE COMPANY, THE
Products Division
4000 S. Princeton, Chicago 9, Ill.

Distributors:

Albuquerque, N. M. –Mayhew & Rademacher, Inc., P. O. Box 3247
Atlanta, Ga. –J. Barton, Jr. Co., 2135 Liddell Drive, N. E.
Birmingham, Ala. –Gibson Steel Co., 841 N. 30th St.
Buffalo 4, N. Y. –Eberl Iron Works, 128 Sycamore St.
Butte, Mont. –Construction Materials, 803 S. Arizona
Charlotte, N. C. –Engineering Sales Co., 123 W. 29th St.
Chicago, Ill. –Globe Products Sales, Inc., 330 W. 40th Place
Dallas, Texas–L. R. Ward Steel Products, 3009 Canton St.
Davenport, Iowa–Industrial Engineering Equip., 122 E. 4th St.
Des Moines, Iowa–Electrical Engineering & Equip. Co., 1201 Walnut
Hibbing, Minn. –Northern Mining Equip. Co., P. O. Box 836
Knoxville, Tenn. –Southeastern, Inc., 917 Cooper St.
Louisville, Ky. –Jones & Laughlin, 6901 Preston Highway
Manlius, N. Y. –Pendel Sales, Inc., Fairgrounds Road
Miami, Fla. –R. J. Dykes Iron Works, 1350 N. W. 21st Terrace
Minneapolis, Minn. –Lakeland Engineering Equip. Co., 116 Third Ave. N.
Mission, Kan. –Metals Materials Co., P. O. Box 922, 6210 Johnson Dr.
New Orleans, La. –Gregory-Salisbury Metal Products, 820 Julia St.
New York, N. Y. –J. C. MacElroy Co., Inc., 74 Trinity Place
Omaha 5, Nebr. –William R. White Co., 2325 S. 27th Ave.
Portland, Ore. –Cascade Distributing, 1630 N. E. Davis
Richmond 13, Va. –Richmond Steel Co., Inc., P. O. Box 1578
Rockford, Ill. –C. E. Paulson Co., 615 Broadway
Salt Lake City, Utah–Peterson Company-Utah, 521 W. 4th North
South Bend, Ind. –Fabricated Steel Products, 2025 S. Main St.

GLOBE INDUSTRIES, INC.
Special Products Division
1125 Sunrise Place, Dayton 7, Ohio
**See ad page 273.

Branch Offices:

Kinnelon, N. J. –c/o L. L. Battis, Fayson Lakes Rd.

Distributors:

Akron 20, Ohio–Acme Safety Products Co., 387-389 Storer Ave.
Baltimore, Maryland–Southern Oxygen Co., 1900 Pressman St.
Binghamton, N. Y. –Gebler & Associates, P. O. Box 739
Birmingham, Ala. –L. P. Harless Co., Inc., 2627 S. Seventh Ave.
Calgary, Alberta, Canada–Canwest Safety Service Supplies Ltd., 135 Third Ave. E.
Charleston 4, W. Va. –Industrial Safety Supply Co., P. O. Box 4342
Charlotte, N. C. –Southern Oxygen Co., P. O. Box 3473
Chicago 23, Ill. –Karel First Aid Supply Co., 4342 Ogden Ave.
Chicago 2, Ill. –J. D. Marshall International, 170 W. Washington St.
Chicago 39, Ill. –Universal Safety Equip. Co., 5115 W. Diversey Ave.
Cleveland 14, Ohio–American Industrial Safety Equip. Co. 3500 Lakeside Ave.
Cleveland 14, Ohio–The Burdett Oxygen Co., 3300 Lakeside Ave.
Columbus 9, Ohio–Ohio Safety Products Co., 538 Seymour Ave.
Dallas, Texas–Hill Equipment & Supply Co., 1745 Levee St.
Dayton 4, Ohio–The Burdett Oxygen Co., 1223 McCook Ave.
Denver 7, Colorado–Goodall Rubber Co., 4861 E. 39th Ave.
Detroit 34, Mich. –Averill Equipment Co., 19225 Conant Ave.
Detroit 17, Mich. –The Burdett Oxygen Co., 13500 Sanders Ave.
Duluth 2, Minn. –W. P. & R. S. Mars Co., 322-324 W. Michigan St.
Fort Wayne 7, Ind. –Safety Equip. & Supply Co., 1724 W. Main St.
Greensboro, N. C. –Southern Oxygen Co., 115 Southern Oxygen Rd.
Huntington Park, Calif. –Burdett Oxygen Co., 2014 Belgrave Ave.
Indianapolis 1, Ind. –The Safety Corp., 3722 E. Michigan St.
Jacksonville 1, Fla. –White Star Sales Corp., 1798 E. Adams St.
Kansas City, Kansas–Zink Safety Equip. Co., 1401 Fairfax Trafficway
Kingsport, Tenn. –Southern Oxygen Co., P. O. Box 178
Knoxville, Tenn. –Safety Equip. Distributing Co., 832 W. Main Ave.
Lincoln Park, Mich. –Almco Industrial Supplies, 1457 Dix
Los Angeles 3, Calif. –Guardian Safety Equipment Co., 7223 S. Main St.
Louisville 2, Ky. –Robert L. Schmitt Co., 308-310 E. Main St.
Memphis 2, Tenn. –Clement Safety Equipment, Inc., 720 S. Third St.
Miami 36, Fla. –Amedic Surgical Co., 1901 N. W. Tenth Ave.
Miami 47, Fla. –Miami Oxygen Service, Inc., 7610 N. W. 23rd Ave.
Midland Park, N. J. –E. Gerstenberg & Son, 420 Godwin Ave.
Milwaukee, Wis. –General Fire Equipment Co., 821 W Atkinson
Milwaukee 10, Wisconsin–Universal Safety Equipment Co., 5237 W. Electric Ave.
Mobile, Ala. –Walter Kidde Sales & Service, 651 Pillans St.
Negaunee, Mich. –Burridge-Nyland Equipment Co., P. O. Box 638
New Haven 11, Conn. –Ahern Safety Equipment Corp., 2 Eld St.
New Orleans, La. –Walter Kidde Sales & Service, 1041 S. Peters St.
Newton Centre 59, Mass. –Hub Safety Equip., Inc., 10 Nightingale Path
Norfolk 10, Va. –Paxton Co., 1019 Main St.
Orange, N. J. –IPCO Safety Products Co., 400 S. Jefferson St.
Peoria, Ill. –Standard Industrial Prod. Co., 3527 W. Farmington Rd.
Philadelphia 33, Pa. –Industrial Products Co., 2820 N. Fourth St.
Pittsburgh 30, Pa. –Pittsburgh Gage & Supply Co., 3000 Liberty Ave.
Poughkeepsie, New York–Emergency Apparatus & Equipment Co., 44 N. Hamilton St.
Roanoke, Va. –Southern Oxygen Co., P. O. Box 441
St. Louis, Mo. –Zink Safety Equip. Co., 7470 St. Charles Rock Rd.
St. Paul 4, Minn. –Continental Safety Equip., Inc., 1951 Selby Ave.
San Jose 12, California–California Safety & Supply Co.
Savannah, Ga. –Southern Marine Supply Co., 202-4-6 W. Bay St.
Syracuse, N. Y. –Syracuse Safety Service, Inc., 1108 Spring St.
Tampa 4, Fla. –Safety Equipment Co. of Fla., 109 Hamilter St.
Toledo 2, Ohio–Acme Safety Products Co., 1823 Vermont
Washington 19, D. C. –Southern Oxygen Co., P. O. Box 5087
W. Webster, N. Y. –Superior Coach & Equip. Co., P. O. Box 47
Williamstown, W. Va. –Industrial Safety Supply Co., 602 Henderson Ave.

Toronto 18, Ontario, Canada–Bell Electricord & Safety Ltd., 341 Bering Ave.

GOJER, INC.
Box 991, Akron 9, Ohio
**See ad page 83.

Manufacturer's Representatives:

Atlanta 5, Ga. –N. A. Williams Co., Inc., 3133 Maple Dr., N. E.
Bothell, Wash. –Victor C. Condron, 17914 80th Ave., N. E.
Chicago, Ill. –Joe Klus, 6215 W. Catalpa Ave.
Denver 19, Colo. –S. F. Buscarello, 2963 S. Meade

Continued on next page

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Detroit 19, Mich.—Lester D. Moss, 20271 Kentfield
El Paso, Tex.—Bill Lyon, 2808 Aurora Ave.
Ft. Worth 2, Tex.—John W. Lovelady Co., 1312 W. T. Waggoner Bldg., Houston & Eighth Sts.
Hopkins, Minn.—Cady-Greer-Moesie Co., 801 E. Excelsior Ave.
Jenkintown, Pa.—Kendall Sales, 201 Leedom St., P. O. Box 248
Kansas City, Mo.—M. H. Swanman, Inc., 2201 Grand Ave.
Louisville, Ky.—Lee Hughes, 1200 Park Hills Court
Los Angeles 7, Calif.—Culver & McNeill, Inc., 3130 S. Hill St.
Muncie, Ind.—H. S. Hans Nikirk, 301 S. Celia, P. O. Box 601
Oakland 6, Calif.—Culver & McNeill, Inc., 555 Fifth Ave.
Pittsburgh 6, Pa.—E. J. Roelandt & Assoc., Whitfield Bldg., 5941 Baum Blvd.
Salt Lake City 10, Utah—H & S Sales Co., P. O. Box 2466
St. Louis 20, Mo.—Paul V. Lawton, 3600 Pine Grove Ave.
Stamford, Conn.—F. B. Henderson Co., 7 Gleason Ave.

Toronto 14, Canada—D. A. McNulty & Co., Ltd., 22 Canmotor Ave.

GOODALL RUBBER COMPANY
Whitehead Road, Trenton 4, New Jersey
**See ad page 157.

Branch Offices:

Boston 10, Mass.—354-8 Congress
Brookfield, Wis.—12710 W. Robin La.
Charlotte 3, N. C.—112 Fairwood (P. O. 11401, Park Rd.
Chicago 6, Ill.—20 N. Wacker Dr.
Cleveland 3, Ohio—4222 Euclid
Denver 7, Colo.—4861 E. 36th
Detroit 7, Mich.—6470 E. Jefferson
Houston, Tex.—3550 W. 12th (P. O. 1408)
Indianapolis 2, Ind.—911 North West St.
Kansas City 8, Mo.—1928 Grand Avenue
Los Angeles 23, Calif.—2939 E. 11th St.
Melrose Park, Ill.—2050 N. Hawthorne
Miami 38, Fla.—4200 N. E. 4th Court (P. O. 38-103)
New York 13, N. Y.—5-7 White St.
New York 20, N. Y.—Rockefeller Center (Rm. 1705), 1270 Avenue of Americas
Philadelphia 4, Pa.—5 So. 36th St.
Pittsburgh 13, Pa.—3501-5 Bigelow Blvd.
Portland 9, Oregon—1211 N. W. 16th Ave.
St. Paul, Minn.—2447 University Ave.
Salt Lake City 4, Utah—631 S. Second, West
Seattle 4, Wash.—1701 Fourth Ave. So.
So. San Francisco—221 E. Grand
Spokane, Wash.—W. 608 Cotta Avenue
Stuart, Fla.—417 South Route A1A
Trenton 4, N. J.—Whitehead Road (P. O. 631)

Montreal, Quebec, Canada—127 A Cremazie, W.
Toronto 2, Canada—250 Explanade, East
Vancouver 3, B. C.—566 Beatty St.

GOODRICH, B. F., FLOORING PRODUCTS
36 Nichols Ave., Watertown, Mass.

Branch Offices:

Chicago 44, Ill.—13-115 Merchandise Mart
New York 17, N. Y.—230 Park Ave. Rm. 1216

Distributors:

Akron, O.—R. C. Musson Rubber Co., 1320 E. Archwood Ave.
Albany, N. Y.—Albany Hardware Co., Broadway at Arch St.
Atlanta, Ga.—Flooring Distributors, 1281 LaFrance St., N. E.
Baltimore, Md.—Va. J. Roesel Co., 2804 Hamsden Ave.
Battle Creek, Mich.—Millers Wholesale, Inc., 98 Capital Avenue S. W.
Buffalo, N. Y.—United Metals Co., 232 Niagra Street
Chicago, Ill.—Midwest Floorcovering Co., 1233 W. Belmont Ave.
Detroit, Mich.—Eidelman Brothers, P. O. Box 5355
Hartford, Conn.—Bestflor Distributors, 263 Park Road
High Point, N. C.—George T. Wood & Sons, 318 W. Broad St.
Indianapolis, Ind.—American Equip. Co., 1015 East 42nd St.
Johnstown, Pa.—Decorative Metals Co., 1001 Plitt Court
Manchester, N. H.—Georgia-Pacific Co., P. O. Box 205
Miami, Fla.—Pan American Tile & Supply, 6875 N. W. 37th Avenue
Milwaukee, Wis.—Lakeside Distributors, 4715 North 32nd St.
Minneapolis, Minn.—Fred T. Lowy Co., 2124 Broadway North East
Newark, N. J.—Foss Carpet Co., 118 S. 14th St.
New York, N. Y.—Spencer-Rheam, Inc., 478 Gerard Ave.
Philadelphia, Pa.—The Fulton Co., North 12th & Sedgely Ave.
Pittsburgh, Pa.—Decorative Metals Co., 206 S. Highland Ave.
Providence, R. I.—Balfred Floor Covering, 166 Valley Rd.
St. Louis, Mo.—Fred T. Lowy Co., 4101 Geraldine Ave.
South Boston, Mass.—Joseph Silverman Co., 176 "A" St.
Spokane, Wash.—Sunset Electric Co., North 703 Division St.
Springfield, Mass.—Elpee Corporation, 60 Martone Place
Toledo, O.—Kabat Distributing Co., 801 Washington St.
Wilkes Barre, Pa.—Hagan Distributors, 35 New Bennett St.

GOODRICH, B. F., FOOTWEAR PRODUCTS
Watertown 72, Mass.
**See ad page 165.

Branch Offices:

Allen Park, Mich.—16500 Oakwood Blvd.
Atlanta, Ga.—1721 DeKalb Ave. N. E., P. O. Box 4509
Baltimore 1, Md.—8-14 E. Eutaw St.
Brisbane, Calif.—325 Valley Dr.
Chicago 44, Ill.—4646 W. Lake St.
Cleveland 13, Ohio—311 St. Claire Ave., N. W.
Dallas, Texas—1400 Turtle Creek Blvd., P. O. Box 6185
Hialeah, Fla—1030 E. 14th St.
Los Angeles 23, Calif.—3141 E. 12th St., P. O. Box 23606
Minneapolis 16, Minn.—800 Turner's Crossroads S.
New York 13, N. Y.—211-13 W. Broadway
Philadelphia 34, Pa.—955 E. Erie St.
Pittsburgh 33, Pa.—1106 Reedsdale St.
St. Louis, Mo.—1529 Washington Ave.
San Francisco 24, Calif.—P. O. Box 24001
Seattle 4, Wash.—1 Hanford St.
Watertown 72, Mass.—139 Cypress St.

GOODYEAR PUMPS INC.
9 Rockefeller Plaza, New York 20, New York

GOODYEAR TIRE & RUBBER COMPANY, THE
1144 E. Market St., Akron 16, Ohio
**See ad page 171.

Shoe Products Division:

Los Angeles, Calif.—6666 E. Washington Blvd.
St. Louis, Mo.—3240 N. Broadway
Windsor, Vermont

Industrial Products Division:

Akron 16, Ohio—1144 E. Market Street
Atlanta 3, Ga.—2755 Piedmont Rd., N. E.
Charlotte 1, N. C.—929-1029 Jay Street
Chicago 10, Ill.—141 West Ohio St.
Cincinnati 29, Ohio—1356 Tennessee Ave.
Cleveland, Ohio—18901 Five Points Rd.
Dallas 35, Texas—7301 Ambassador Row
Denver 4, Colo.—1207 Wazee Street
Detroit 11, Mich.—6500 Mt. Elliott Ave.
Los Angeles 22, Calif.—6666 E. Washington Blvd.
Minneapolis 13, Minn.—418 Stinson Blvd.
New York 22, N. Y.—400 Park Avenue
Pittsburgh 13, Pa.—4760 Centre Avenue
St. Louis 14, Mo.—8544 Page Blvd.
San Francisco 3, Calif.—1717 Harrison Street

GOSHEN MFG. CO., INC.
Goshen, Indiana

GOULD-NATIONAL BATTERIES, INC.
MICAD Division
172 Pleasant St., Easthampton, Mass.

Branch Offices:

Glendale, Calif.—3773 Hillway Drive
Chicago Heights, Ill.—195 Olympia Plaza
New York, N. Y.—7 Dey Street

Distributors:

Little Rock, Ark.—J. D. Williams, 203 E. Markham St.
San Francisco, Calif.—M. J. Gigy & Assoc., Inc., 467 Sixth St.
San Gabriel, Calif.—T. A. Ford Co., Inc., 402 Agostino Rd.
San Francisco, Calif.—Howe-Stephens Co., 55 New Montgomery St.
San Francisco, Calif.—K. M. Ryals Co., 141 King St.
Denver, Colo.—Automatic Control & Equip Co., 5750 Pecos St.
Clearwater, Fla.—David & Park Co., 1841 Fox Circle
Chicago, Ill.—Otto Bussonius & Co., 80 E. Jackson Blvd.
Chicago, Ill.—Gassner & Clark Co., 6644 N. Western Ave.
Chicago, Ill.—R. S. Terhune & Assoc., 22 W. Madison St.
Indianapolis, Ind.—Calvin D. Arnold, 2123 N. Meridian St.
Cedar Rapids, Iowa—C. R. White, P. O. Box 21
New Orleans, La.—Mid-South Sales Co., Inc., 4424-B Earhart Blvd.
Belmont, Mass.—J. F. Collins Co., P. O. Box 76
Boston, Mass.—Ray Perron & Co., Inc., 1870 Centre St.
Springfield, Mass.—Standard Electric Time Co., 89 Logan St.
Detroit, Mich.—E. F. Walter, 3049 E. Grand Blvd.
Minneapolis 15, Minn.—Electrical Jobbers Equip. Co., 619 Fourth Ave. S.
Kansas City, Mo.—Lynn Elliott Co., 832 Law Bldg.
St. Louis, Mo.—Petefish-Kemp Engr'ng Co., 6414a Hampton Ave.
Butte, Mont.—Monitor Distributors, Inc., 606 Utah Ave.
Omaha, Nebr.—F. C. Clatterbaugh, P. O. Box 152
Camden, N. J.—Adley Corp., 210 N. 6th St.
Hoboken, N. J.—Mar-Oil Electric, Inc., 219 Hudson St.
Glen Rock, N. J.—R. L. Ringer Co., 14 Glen Ave.
Albuquerque, N. M.—Denzil D. Jones, Jr., 614½ Fitzgerald, N. W.
New York, N. Y.—Walton R. Collins Co., Inc., 122 E. 42nd St.
Rochester, N. Y.—Reed-Tollefson Corp., 2815 Monroe Ave.
Alexander, N. Y.—Donald R. Leonard, 32 Main St.
Cleveland, Ohio—Hutton-Reske & Assocs., 451 The Arcade
Columbus, Ohio—Arthur N. Ulrich Co., P. O. Box 6584, Bexley Br.
Portland, Oregon—Andrew L. Polich, Inc., 734 N. W. Glisan St.
Pittsburgh, Pa.—Muller, Harper & Assocs., Inc., 2410 First National Bank Bldg.
El Paso, Tex.—Associated Engineers, P. O. Box 5384
Dallas, Tex.—Kemp Engineering Co., 2618 Manana Dr.
Salt Lake City, Utah—Leonard M. Slusser Co., P. O. Box 104
Arlington, Va.—Adley Corporation, 1500 Arlington Blvd.
Seattle, Wash.—Lloyd W. Edwards, 2648 Plymouth St.

GRANET CORP.
25 Loring Dr., Framingham, Mass.
**See ad page 184.

GRAYMILLS CORP.
3705 N. Lincoln Ave., Chicago 13, Ill.
**See ad page 91.

GRINNELL CO., INC.
260 W. Exchange St., Providence 1, R. I.
**See ad page 243.

Branch Offices:

Albany 7, N. Y.—100 State St.
Baltimore 23, Md.—2402 W. Fayette St.
Buffalo 6, N. Y.—1374 Clinton St.
Charlotte 8, N. C.—1431 W. Morehead St.
Chattanooga 4, Tenn.—207 N. Holly St.
Chicago 9, Ill.—4425 S. Western Ave.
Cincinnati 29, Ohio—3253 Fredonia Ave.
Cleveland 3, Ohio—1294-96 E. 55th St.
Columbus 15, Ohio—71 North Washington Ave.
Dallas 7, Texas—161 Glass St.
Denver 2, Colo.—2175 15th St.
Detroit 26, Mich.—2639 Cadillac Tower
Fresno 1, Calif.—3081 Hamilton Ave.
Hartford (West) 10, Conn.—609 New Park Ave.
Honolulu, Hawaii—Box 2657
Houston 20, Texas—6999 Old Clinton Rd.
Indianapolis 20, Ind.—2118 E. 56th St.
Jamaica Plain 30, Mass.—115 Brookside Ave.
Kansas City (North) 16, Mo.—2316 Burlington Ave.
Los Angeles 13, Calif.—520 Mateo St.
Louisville 13, Ky.—4623 Illinois Ave.
Memphis 12, Tenn.—2543 Summer Ave.
Milwaukee 1, Wis.—1819 W. St. Paul Ave.
Newark 2, N. J.—207 Market St.
New Orleans 25, La.—7136 Washington Ave.
New York 22, N. Y.—400 Park Ave.
North Birmingham 3, Ala.—1929 Third Ave.
N. E. Atlanta 2, Ga.—240 N. Highland Ave.
Oakland 4, Calif.—6121 Hollis St.
Philadelphia 34, Pa.—Erie Ave., & D. St.
Phoenix, Ariz.—4344 E. Indian School Rd.
Pittsburgh 33, Pa.—1020 Ridge Ave.
Portland 3, Maine—501 Fore St.
Portland 10, Ore.—3240 Northwest 29th Ave.
Providence 1, R. I.—260 W. Exchange St.
Richmond 30, Va.—3105 W. Moore St.
Rochester 21, N. Y.—1673 Clinton Ave., North
Sacramento 11, Calif.—615 Seventh St.
St. Louis 10, Mo.—1615 S. Kingshighway
San Diego 10, Calif.—625 Broadway
San Francisco 7, Calif.—601 Brannan St.
Seattle 1, Wash.—3101 Elliott Ave.
South Minneapolis 15, Minn.—623 Washington Ave.
Spokane 3, Wash.—East 909 Sprague Ave.
Winter Park, Fla.—Knowles at Welbourne

Edmonton, Alta.—11340 120th St.
Montreal 16, Que.—3980 Jean Talon St.
Toronto 9, Ont.—2440 Dundas St., West
Vancouver 6, B. C.—1150 Raymur Ave.
Winnipeg 12, Man.—777 Madison St.
Mexico 1, D. F.—Ave. Balderas 32-308

HACK SHOE COMPANY
28 West Adams Avenue, Detroit 26, Michigan

HALPERIN, A. E., CO., INC.
75 Northampton St., Boston 18, Mass.
**See ad page 274.

HALPRIN SUPPLY COMPANY
1355 South Flower St., Los Angeles 15, California

HAMILTON CASTER & MFG. CO., THE
1543 Dixie Hwy., Hamilton, Ohio

HAMILTON TOOL COMPANY, THE
9th & Hanover Streets, Hamilton, Ohio

Distributors:

Atlanta 3, Ga.—Chandler Machinery Co., 120 Houston St., N. E.
Birmingham 2, Ala.—Moore-Handley Hardware Co., 27 S. 20th St.
Buffalo, N. Y.—R. L. Crane Machinery Co., 438 Delaware Ave.
Burlingame, Calif.—Tornquist Machinery Co., 846 Burlway Rd.
Cincinnati, O.—The C. H. Gosiger Machinery Co., 1046 Delta Ave.
Cincinnati 37, Ohio—A. C. Pletz Co., Roselawn Center Bldg.
Cleveland, Ohio—Garco Machinery, Inc., 21000St. Clair Ave.
Dallas 6, Texas—Machine Tool Associates, 214Prentice Bldg.
Detroit, Mich.—Chas. A. Strelinger Co., P. O. Box 4674
Flourtown, Pa.—J. A. Carlin Co., 1110 Bethlehem Pike
Grand Rapids, Mich.—Joseph Monahan Co., 351 Indiana Ave.
Granville, Ohio—B. A. Derr, Granview Rd.
Greensboro, N. C.—Jeffreys Engrg. & Equip. Co., Guilford Bldg.
Houston, Tex.—Wessendorff, Nelms & Co., 5535 Harvey Wilson Dr.
Indianapolis, Ind.—Kenneth J. Galm Co., 46 S. Capitol Ave.
Indianapolis, Ind.—Indiana Mfg. Supply Co., 945 Ft. Wayne Ave.
Indianapolis, Ind.—J. O. Sadler Co., 1805 Sharon Ave.
Kansas City 8, Mo.—Bossert Co., 17th & Main Sts.
Long Island City, N. Y.—Triplex Machine Tool Corp., 25-18 43rd Ave.
Los Angeles, Calif.—Tornquist Machinery Co., 3825 Santa Fe Ave.
Milford, Conn.—Robert E. Morris Co., 953 Bridgeport Ave.
Milwaukee 18, Wisc.—Milwaukee Eng. & Machinery Co., 5230 N. 124th
Minneapolis, Minn.—Hilton Granquist Co., 2431 E. Franklin Ave.
Newton, Mass.—Robert E. Morris Co., Adams St. at Silverlake
Oak Park, Ill.—Dvorak Machinery Co., 7001 W. North Ave.
Pittsburgh, Pa.—Stanley Berg Machinery Co., 1231 Banksville Rd.
Rochester 11, N. Y.—Farley & Allen, Inc., 37 Centennial St.
St. Louis 3, Mo.—Lee Hornever Co., 6326 Bartmer Ave.
Seattle, Wash.—Hallidie Machinery Co., 210 Hudson St.
Shreveport, La.—Oliver H. Van Horne Co., Spring & Fannin St.
Syracuse 1, N. Y.—J. F. Owens Machinery Co., 1810 E. Erie Blvd.
Tampa, Fla.—Cameron & Barkley Co., 107 S. Franklin St.
Tulsa, Okla.—Gorton-Howell Machinery Co., 217 E. First St.
West Hartford, Conn.—Robert E. Morris Co., Box 41

HAMILTON WATCH COMPANY
Presentation Sales Division
Lancaster, Pa.

Regional Offices:

Chicago 1, Ill.—35 E. Wacker Dr.
New York 20, N. Y.—30 Rockefeller Plaza, Suite 1424
San Francisco 5, Calif.—116 New Montgomery St.

HANDLING DEVICES CO., INC.
94 Concord Lane, Cambridge 38, Mass.

HANNAY, CLIFFORD B., & SON, INC.
Westerlo, New York

Distributors:

Albuquerque, N. M.—Kohlhaas Tank & Equip. Co., 1824 N. Second St.
Atlanta, Ga.—Equipment Sales Co., 649 Ashby St., N. W.
Augusta, Ga.—MECO of Augusta, Inc., Skyview Drive
Beaumont, Texas—Norvell Wilder Supply Co., P. O. Box 4145
Birmingham, Ala.—Gardner Johnson & Co., 1822 Huntsville Rd.
Charlotte 1, N. C.—Southern Pump & Tank Co., 1730 N. Tryon St.
Chicago 35, Ill.—Bloti-Robb Co., 1927 No. Harlem Ave.
Cincinnati 2, Ohio—The Netherland Rubber Co., 304-306 Main St.
Cleveland, Ohio—L. O. Halverstadt, Inc., 1501 Payne Ave.
Conshohocken, Pa.—H. W. Buzzard Co., 12th Ave. & Forrest St.
Dallas, Texas—Allied Oil Equipment Co., 167 Parkhouse St.
Denver, Colo.—Littlejohn's Equip. Co., 1322-24 19th St.
Desmoines 4, Iowa—A. Y. McDonald Mfg. Co., 629 S. W. 9th St.
Detroit 4, Michigan—R. V. Seaman Co., 14222 Wyoming
Duluth 2, Minn.—W. P. & R. S. Mars Co., 322-324 W. Michigan St.
El Paso, Texas—Kohlhaas Tank & Equip. Co., 6905 N. Loop Rd.
Fargo, North Dakota—O'Day Equipment, Inc., 2500 Main Ave.
Fort Wayne 2, Ind.—Bowser, Inc., 1302 E. Creighton
Green Bay, Wis.—Herlache Industrial Supply Co., 121 N. Broadway
Harrington, Dela.—Callis-Thompson, Inc., 1/4 Mile South on Rt. 13
Huntington, W. Va.—Banks-Miller Supply Co., 330 Third Ave.

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Indianapolis 9, Indiana—Central Rubber & Supply Co., Inc., 30 E. Georgia St.
Jackson, Miss.—Cruzen Oil Equip. Co., 249 E. Pascagoula St.
Jacksonville, Fla.—Petroleum Engr. Co., 814-820 Talleyrand Ave.
Knoxville 1, Tenn.—R. B. M. Company, 414 Willow Ave., S. E.
Little Falls, N. J.—Mooney Brothers Corp., 195 Paterson Ave.
Little Rock, Ark.—Southern Co., Inc., 1901 E. 9th St.
Los Angeles 58, Calif.—Shields, Harper & Co., Inc., 2650 Leonis Blvd.
Louisville 10, Ky.—Baker-Bohnert Rubber Co., 1311 Bernheim Lane
Memphis 31, Tenn.—Cruzen Oil Equipment Co., 309-17 Jefferson Ave.
Miami, Fla.—Mono-E Equipment Co., 6430 N. W. 22nd Ave.
Milwaukee 8, Wis.—Badger Oil Equipment Co., 2246 N. 44th St.
New Haven, Conn.—Petroleum Equip. & Supply, 313 Forbes St.
New Orleans, La.—Service Equip. Co., Inc., 1515 Tchoupitoulas St.
New York 10, N. Y.—Renick & Mahoney, Inc., 380 Second Ave.
Oakland 11, Calif.—Shields, Harper & Co., 5107 Broadway
Omaha 1, Nebraska—A. Y. McDonald Mfg. Co., 1201 Dodge St.
Phila. 30, Pa.—E. O. Habnegger Co., Fairmount Ave. at 24th St.
Phoenix, Ariz.—Geo. S. Thomson Co., Inc., 915 S. Central Ave.
Pittsburgh 23, Pa.—H. B. Parke Co., 936 Butler St., Etna
Pittsfield, Mass.—Pittsfield Supply Co., 901 North St.
Portland, Maine—Gould Equipment Co., 17 Haskell Ave., Sa.
Portland, Ore.—Shields, Harper & Co., Inc., 403 N. W. 15th St.
Quincy, 71, Mass.—Globe Rubber Works, Inc., 11 Newberry St.
Richmond 20, Va.—Pump & Tank Co., Inc., 3110 North Blvd.
St. Louis 20, Mo.—Baden Equip. & Constr. Co., 3303 Goodfellow Blvd.
Salt Lake City 9, Utah—Lang Wayne Equip. Co., 255 W. First So. St.
Seattle, Wash.—Shields, Harper & Co., Inc., 416 Dexter Ave.
Severna Park, Maryland—Chesapeake Fire & Safety Equip. Co., P. O. Box 132
Sioux Falls, S. D.—Petroleum Equipment Co., 417 N. Weber Ave.
South Bend, Ind.—Coffield Supply Co., Inc., 1626 S. Main St.
Springfield, Ill.—Certified Equip. & Mfg. Co., P. O. Box 248
Syracuse, N. Y.—Edward Joy Co., 905-35 Canal St.
Syracuse, N. Y.—Syracuse Supply Co., Court Street Rd.
Tallahassee, Fla.—Holley, Inc., Bldgs. 124-125 Municipal Airport
Toledo 5, Ohio—Tomlin Toledo Co., 217 First St.
Tonawanda, N. Y.—Wishman Industries, Inc., 330 E. Niagara St.
Tulsa 3, Okla.—Charles Wheatley Co., 414 S. Detroit
Warwick 5, Rhode Island, J. M. Trask, 439 Post Road
Worland, Wyoming—Worland Oxygen Co., 404 N. Railroad Ave.

HANSSON, ELOF, INCORPORATED
711 Third Avenue, New York 17, N. Y.

Branch Offices:

Atlanta, Ga.—John F. Flint, Drawer B, Northside Sta.
Beverly Hills, Calif.—Ralph E. Bennett, 339 S. Robertson Blvd.
Oklahoma City, Okla.—Jerry D. Porch, P. O. Box 8246
Radnor, Pa.—Chas. M. Wall, P. O. Box 46
Shreveport, La.—H. F. Falbaum, P. O. Box 4347
Stamford, Conn.—Peter P. Ridabock, 999 High Ridge Rd.

Distributors:

Atlanta 5, Ga.—Southern Acoustics & Supply, Drawer B, Northside Station
Bala-Cynwyd, Pa.—Harry Mather, Inc., P. O. Box 308
Baltimore 18, Md.—Lancaster, May & Co., 4018 Old York Road
Beverly Hills, Calif.—Ralph E. Bennett & Assoc., 339 S. Robertson Blvd.
Charlotte, N. C.—Chet Adams Co., 823 Professional Bldg.
Chattanooga, Tenn.—H. N. Sawrie & Co., P. O. Box 4146
Cleveland 15, Ohio—Minor-Webber, Inc., 1901 Euclid Ave.
Dallas 6, Texas—The Dunne Co., Inc., 305 Meadows Bldg.
Denver 23, Colo.—Herman & Von Rosenberg, 99 Kalomath Ave.
Greensboro, N. C.—Chet Adams Co., P. O. Box 3073
Harrisburg, Pa.—Heath-Crowley, Inc., 3012 Yale Avenue, Camp Hill
Hartford, Conn.—Alfred J. Hamilton Co., 2996 Main St.
Indianapolis 20, Ind.—Colby Equipment Co., 1077 East 54th St.
Kansas City 8, Mo.—D. M. Allen Co., 3021 Main Street
Los Angeles 22, Calif.—Preferred Equipment, Inc., 5442 Jillson St.
Melrose Park, Ill.—Anning—Johnson Co., Inc., 1959 Anson Drive
Minneapolis, Minn.—Jay Distributing Co., 719 South Eighth St.
Norfolk 13, Va.—Chet Adams Co., 3329 Chesapeake Blvd.
Omaha, Nebr.—Central States Engineering & Sls., P. O. Box 1754
Pittsburgh 21, Pa.—McGee-Fehr Co., 1024 Rebecca Avenue
Portland 4, Oregon—Mead & Associates, 610 S. W. 2nd Ave.
Sacramento, Calif.—G. J. Yamas Co., Inc., 3730 Broadway
Salt Lake City, Utah—Paul E. Benton Co., 220 West 3rd South
San Francisco 5, Calif.—G. J. Yamas Co., Inc., 821 Howard St.
Seattle 1, Wash.—George E. Mead Co., 309 Cedar Street
Shreveport, La.—Southern Accoustics & Supply, P. O. Box 4347
Spokane 3, Wash.—Climate Control Co., S. 104 Division St.
Toledo 9, Ohio—Air Handling Products Co., 3151 South Avenue
Wichita, Kansas—D. M. Allen Co., P. O. Box 1081

HARRINGTON COMPANY, THE
Gravers Road, Plymouth Meeting, Pennsylvania
**See ad page 207.

Distributors:

Abington, Pa.—William E. Storey, 1219 Old York Rd.
Adrian, Michigan—Utility & Industrial Supply Co., 708 N. Main St.
Albuquerque, N. M.—Contractors' Equip. & Supply Co., 707 Broadway N. E.
Altoona, Pa.—Force Electric Co., 1814 Union Ave.
Anniston, Ala.—Alex. Rowell Supply Co., 521 W. 23rd St.
Appleton, Wis.—Schlafer Supply Co., 115 W. College Ave.
Arcata, Calif.—Loggers and Mill Supply Co., Box 517
Arcata, Calif.—Munnell & Sherrill of Calif., 156 So. "G" St.
Arcata, Calif.—Reliable Hdwe. Co., P. O. Box 695
Arlington, Va.—Phillips Machinery & Tractor Co., 2910 Jeff Davis Highway
Asheville, N. C.—Rea Auto Supply Inc., 442 Depot St.
Atlanta, Ga.—Cowan Supply Co., 485 Bishop St., N. W.
Atlanta, Ga.—Industrial Service Co., P. O. Box 13555, Sta. K.
Atlanta, Ga.—Ziegler Tools, Inc., 490 Luckie St., N. W.
Augusta, Ga.—Tools Supply Co., Inc., Sky-View Lane
Bakersfield, Calif.—McCarthy Tank & Steel Co., 3030 "M" Street
Bala Cynwyd, Pa.—Maddock & Co., 55 Rock Hill Rd.
Baltimore 1, Md.—The W. L. Reynolds Co., 502 W. Franklin St.
Barre, Vermont—Casellini-Venable Corp., Depot Square
Bath, N. Y.—Hanna & Hamilton Inc., 17 Shannon St.
Bayonne, N. J.—Meyer & Ruh Co., 447 Broadway
Battle Creek, Mich.—Kendall Industrial Supplies, Inc., 125 Grand Trunk Ave.
Bell, Calif.—Crane Hoist Engineering & Parts Co.
Benton Harbor, Mich.—Kendall Industrial Supplies, Inc. 1286 Pipestone St.
Berkely, Calif.—J. R. Feeney Co., 600 Addison St.
Berkely, Calif.—Walter Weyman Co., 607 Addison St.
Bethlehem, Pa.—W. A. Tydeman & Son, Inc., 2224 Industrial Dr.
Binghamton, N. Y.—Binghamton Material Handling Co., Box 286
Binghamton, N. Y.—French Mill Supply Co., P. O. Box 286
Binghamton, N. Y.—LeValley McLeod, 358 Water St.
Birmingham, Ala.—Industrial Safety Supply Co., 1727 Huntsville Rd.
Boise, Idaho—Engineering Sales Service, Inc., 410 S. Capitol Blvd.
Boise, Idaho—M. R. Priest & Sons, 515 E. Highland St.
Boise, Idaho—Spencer Supply Co.
Boise, Idaho—Yanke Machine Shop, 1114 Front
Boston 10, Mass.—Boston Tram Rail Co., Inc. 9—11 T Wharf
Boston 10, Mass.—John R. Parry, Inc., 135 Pearl St.
Bradford, Pa.—Bovaird & Seyfang Mfg. Co.
Bradford, Pa.—Lloyd Smith Co., 12 S. Kendall Ave.
Bradford, Pa.—Oil Well Supply Co.
Bridgeport, Pa.—Lloyd H. Davis, 130 W. 4th St.
Brookline 46, Mass.—Robert A. Abel & Co., Inc., 112 Cypress St.
Brooklyn, N. Y.—Allboro Equip. Co., 839 Pennsylvania Ave.
Brooklyn, N. Y.—D. Brown Hdwe. Co., 1057 Flushing Ave.
Brooklyn, N. Y.—East New York Hdwe. Co., Inc., 2753 Atlantic Ave.
Brooklyn, N. Y.—Elgood Hydraulics Corp., 372-80 Ten Eyck St.
Brooklyn, N. Y.—Thos. Grogan's Son Inc., 403 Van Brunt St.
Brooklyn, N. Y.—North Side Leather Belting Co., 248 Lorimer St.
Brunswick, Ga.—Parker Helms & Langston, Inc., 222 Newcastle St.
Buffalo, N. Y.—The Elwood Corp., 2180 Elmwood Ave. at Hinman
Buffalo, N. Y.—H. D. Taylor Co., 99 Oak St.
Burlington, Vermont—Parker Danner Co., 1901 Williston Rd.
Cambridge 40, Mass.—Lewis E. Tracy Co., 121 Alewife Brook Parkway,
Camden, N. J.—Antrim Hdwe. Co., 1514 Federal St.
Carlisle, Pa.—Cochran & Allen, 22 S. Hanover St.
Casper, Wyoming—Industrial Distributors, 310 S. Spruce St.
Cedar Rapids, Iowa—The Kacena Company, 829 2nd Ave., S. E.
Charleston, S. C.—C. D. Franke & Co., Inc., 170 Meeting St.
Charleston 23, W. Va.—Capital City Supply Co., Broad & Smith Sts.
Charleston, W. Va.—McJunkin Corp., 1352 Hansford St.
Charleston, W. Va.—West Virginia Steel Corp.
Charlotte, N. C.—Southern Electric Service Co., 714 West Trade St.
Chattanooga, Tenn.—Chattanooga Belting & Supply Co., 1221 Market
Chicago 6, Ill.—Clifford Peterson Tool Co., 123 N. Jefferson St.
Chicago 9, Ill.—Great Lakes Supply Corp., 1026 W. 90th St.
Chicago 24, Ill.—Eric Nelle Co., 4532 W. Congress St.
Chicago 6, Ill.—McMaster-Carr Supply Co., 640 W. Lake St.
Chicago 6, Ill.—Pedersen Bros. Tool & Supply Co., 625 W. Washington
Chicago 6, Ill.—Pulver Machinists Supply Co., 27 N. Jefferson St.
Chicago 16, Ill.—Seaboard Supply Co., 2118 Michigan Ave.
Chicago 6, Ill.—Sterling Products Co., 123 N. Jefferson St.
Chico, Calif.—Pollak Steel Supply
Chillicothe, Ohio—Chillicothe Hdwe. & Supply Co., 148 N. Hickory St.
Cincinnati, Ohio—Wm. T. Johnston Co., 1870 Summit Rd.
Clarendon, Pa.—North Penn Pipe & Supply Co., Main St.
Clarksburg, W. Va.—Baker Equipment Engineering Co., Inc., 250 Monticello Ave.
Cleveland, Ohio—The White Tool & Supply Co., 1235 W. Sixth St.
Cleveland, Ohio—The Geo. Worthington Co., 802 St. Clair Ave. N. W.
Clinton, S. C.—Industrial Supply Co., 209 Main St. W.
Coeur d' Alene, Idaho—Gardner Supply Co.
Concord, N. H.—Casellini-Venable Corp., 163 S. Main St.
Columbia, S. C.—Brown-Rogers-Dixon, 802 Gervais St.
Columbia, S. C.—C. D. Franke & Co., Inc., 912 Lady St.
Columbia, Tenn.—Porter-Walker Hdwe. Co., 15-16 Public Square
Columbus, Ga.—Columbus Iron Works Co.
Columbus, Ohio—E. W. Smith Machinery Co., 523 N. High St.
Corpus Christi, Texas—Crane Welding Supply Co., 918 Port Ave.
Corpus Christi, Texas—Holders Equipment Co., 2925 Agnes St.
Covington, Kentucky—The Borne Co., Inc., 1549 Kellogg St.
Cucamonga, Calif.—Philmac Co., 10058 Foothill Blvd.
Dallas, Texas—Oil Well Supply Co.
Davenport, Iowa—Harry Alter & Sons, 514 S. Howell St.
Dayton 1, Ohio—Dayton Supply & Tool Co., 520 E. First St.
Decatur, Ala.—H & H Supply Co., Inc., 158 First Ave. N. E.
Denver, Colo.—Johnson Supply Co., 1123 Wazee St.
Des Moines 9, Iowa—State Machinery & Supply Co., Inc., 709 Cherry
Detroit, Mich.—H. D. Edwards & Co., 8550 Lyndon Ave.
Detroit, Mich.—Kenmac Corporation, 13116 Fenkell Ave.
Elmira, N. Y.—LeValley McLeod & Co., Inc., 215 E. Church St.
Emeryville, Calif.—Crane Hoist Engineering Co., 3657 Adeline St.
Endicott, N. Y.—Newing Equip. Corp., 711 E. Main St.
Englewood, N. J.—Contractors Supply Corp. of N. J., 410 S. Dean St.
Erie, Pa.—James H. Cross Supply Co., 2765 W. 8th St.
Erie, Pa.—Erie Materials Handling Corp., 2401 W. 12th St.
Erie, Pa.—Perry Mill Supply Co., 1115 N. 12th St.
Escondido, Calif.—E & L Supply Co., 215 W. Washington Ave.
Eugene, Oregon—George Wymo & Sons
Eureka, Calif.—Brizard Matthews Machinery Co.
Eureka, Calif.—McGaraghen Supply Co.
Eureka, Calif.—Humboldt Supply Co., 2029 Broadway
Evansville 7, Ind.—Brown & Hubert, 306 N. 7th Ave.
Exton, Pa.—B. E. Wallace Products Co.
Fair Lawn, N. J.—Service Power Transmission Co., 13-01 Fifth St.
Findlay, Ohio—Steele's Industrial Supplies, 201 Crawford St.
Flint, Mich.—Flack Pennell of Flint, Inc., 4705 North Dort Highway,
Fort Wayne, Ind.—Wayne Hardware Co.
Fort Worth, Texas—Oliver H. Van Horn Co., Inc., 451 South Main St.
Fresno, Calif.—Bakers Welding Supply Co., 1705 Ventura St.
Fresno, Calif.—Pacific Mill & Mine Supply Co., 530 Van Ness Ave.
Gadsden, Ala.—Post Welding Supply Co., 340 S. Second St.
Gainesville, Ga.—Gainesville Industrial Supply Co., 732 S. Main St.
Grand Rapids, Mich.—Ammeman Industrial Supply Co., 329 Bridge St., N. W.
Green Bay, Wis.—W. E. Thew Supply Co., 339 S. Broadway
Greensboro, N. C.—Southern Electric Service Co., 853 S. Elm St.
Greenville, S. C.—Industrial Supply Co., 118 Dellwood Dr.
Greenville, S. C.—Moore Tinsley Supply Co.
Greenville, S. C.—Southern Electric Service Co.
Hagerstown, Md.—Foltz Mfg. & Supply Co., Washington & Locust Sts.
Hamilton, Ohio—Fischer Hdwe. & Supply, Inc., 20 North Third St.
Harrisburg, Pa.—Raub Supply Co., 24 S. 10th St.
Hicksville, N. Y.—George Malvese & Co., 530 Old Country Rd.
Holyoke, Mass.—Chase & Coolidge Co., 12—14 Main St.
Honolulu, Hawaii—Hawaiian Equip. Co., Ltd., 2880 Kilihau St.
Houston 3, Texas—Holders Equipment Co., 1715 Polk Ave.
Houston, Texas—Oliver H. Van Horn Co., Inc., Franklin Ave. & Austin Street
Huntsville, Ala.—J. E. Sandlin Hdwe. Co., 5 So. Side Sq.
Hyde Park, Mass.—Parker, Danner Co., 29 Factory St.
Idaho Falls, Idaho—Ideal Hardware Co.
Indianapolis 1, Ind.—The Safety Corp., 3702 E. Michigan St.
Indianapolis, Ind.—The Tway Company, 602 N. Park Ave.
Indianapolis 3, Ind.—Vonnegut Hardware Co., 402 W. Maryland St.
Ironton, Ohio—Meehan Steel Products Co., 511 N. 2nd St.
Jackson, Miss.—Mississippi Foundry & Machine Co., 300 W. South St.
Jackson, Michigan—Utility & Industrial Supply Co., 921 E. Michigan Ave.
Jacksonville 1, Fla.—J. G. Christopher Co., 416 E. Bay St.
Jacksonville, Fla.—Boswell Supply Co., 11 Florida Ave.
Jamaica, N. Y.—Pacific Supply Co., 161-01 Rockaway Blvd.
Jamestown, N. Y.—Bob Machinery Co., 620 W. Eighth St.
Johnstown, Pa.—The Thackray Co., 1036 Broad St.
Kalamazoo, Mich.—Kendall Industrial Supplies, Inc., 1918 King Hwy.
Kalamazoo, Mich.—Jos. E. Loughead Co., 326 W. Kalamazoo Ave.
Kansas City, Mo.—Contractors Supply Co., 620 E. 18th St.
Kansas City, Mo.—Stowe Hdwe. & Supply Co., 1322 W. 13th St.
Kansas City, Kan.—Zink Safety Equipment Co., Inc., 1401 Fairfax Trafficway,
Kearny, N. J.—Schlank Savage, Inc., 100 Arlington Ave.
Knoxville, Tenn.—Industrial Belting & Supply Co., 408 Jackson Ave.
Knoxville, Tenn.—S. T. Weaver Co., 1000 W. Clinch Ave.
La Jolla, Calif.—S. W. Bowser Co., 5360 Calumet
Lancaster, N. Y.—H. D. Taylor Co.
Lancaster, Pa.—Raub Supply Co., James & Mulberry Sts.
Lansing, Mich.—Schaberg—Dietrich Hdwe. Co., 1611—35 N. Grand River Ave.
Laurinburg, N. C.—Electrical Equipment Co., 212 N. Main St.
Lawrence, Mass.—Treat Hardware Corp., 982 Essex St.
Lexington, Kan.—Van Doren Hardware Co., Inc., Marino & Water Sts.
Lima, Ohio—Steele's Industrial Supplies, 107 N. Pierce St.
Lockport, N. Y.—Ward Bros. Mill Supply Co., Inc., 64-76 Market St.
Long Beach, Calif.—Bagby's Wire Rope Splicing & Spooling Service, 1600 West 16th St.
Long Island City, N. Y.—Contractors Supply Corp., 4472-11th St.
Long Island City, N. Y.—Hamburger Hdwe. Co., 28-15 Jackson Ave.
Long Island City, N. Y.—Kaiser Martini Inc., 36-01 Vernon Blvd.
Long Island City, N. Y.—Lilien Hdwe. and Supply Co., 49-06 Vernon
Long Island, N. Y.—Westbury Contractors Supply Corp.
Los Angeles, Calif.—Ball & Black Supply Co., 3039 E. 12th St.
Los Angeles, Calif.—John A. Batcheler Co., 2852 E. 11 St.
Los Angeles, Calif.—W. T. Billard Inc., 734 East Third St.
Los Angeles, Calif.—Cable Distributors, Inc., 4903 E. Washington
Los Angeles, Calif.—Chancler & Lyon Co., 1423 So. Grand Ave.
Los Angeles, Calif.—J. B. Cox Tool & Supply Co., 1430 East Firestone Blvd.
Los Angeles, Calif.—Crane Veyor Corp., 1340 S. Boyle Ave.
Los Angeles, Calif.—Stanley E. Morris Co., 9584 Alhambra Ave.
Los Angeles, Calif.—Seaboard Machinery Co., 3212 E. Olympic Blvd.
Los Angeles, Calif.—Leo M. Shanahan, 4274 S. Hoover St.
Los Angeles, Calif.—Robert A. Thistlewhite Co., 4937 Valley Blvd.
Los Angeles, Calif.—J. G. Tucker & Son, 455 E. Third St.
Los Angeles, Calif.—Western Tool Distributors, Inc., 441 S. Towne
Louisville 12, Ken.—Oglesby Supply Co., Inc., 432 E. Broadway,
Lubbock, Texas—Mac Austin Co., Texas Ave. at 17th St.
Macon, Ga.—Macon Supply Co., Inc.
Manchester, N. H.—Cohen Machinery Co., Douglas & Turner Sts.
Maywood, Ill.—Handling Systems, Inc., 1206 S. 17th Ave.
Melrose Park, Ill.—Pulver Machinists Supply Co., 2000 N. 25th St.
Memphis 3, Tenn.—E. C. Blackstone Co., 600 Madison Ave.
Miami 42, Fla.—Central Machinery & Supply Co., 3945 N. W. 32nd Ave.
Milwaukee, Wisconsin—Tools & Abrasives, Inc., 150b W. Pierce St.
Minneapolis, Minnesota—Electric Machinery Mfg. Co.
Mobile, Ala.—Gulf Coast Marine Supply Co., 199 S. Royal St.
Modesto, Calif.—Stanislaus Implement & Hdwe. Co.
Montgomery, Ala.—Teague Hdwe. Co., 174 Commerce St.
Nashville, Tenn.—Mid-Tenn. Supply Co., 1001 3rd Ave.
Neshaminy, Pa.—U. S. Equipment, Inc., Easton Rd.
Newark, N. J.—Newark Caster & Truck Corp., 355 Park Ave.
New Orleans, La.—Delta Ship Service Co., Inc., P. O. Box 453
New Orleans 12, La.—Equitable Equipment Co., Inc., 410 Camp St.
New Orleans 12, La.—Edgar J. Haas' Sons, Knc. 730 St. Charles
New Orleans 7, La.—Standard Supply & Hardware Co., Inc. 822 Tchoupitoulas St.
Newport Beach, Calif.—Newport Supply Co., 2700 W. Coast Hwy.
New York, N. Y.—Wm. B. Crookston & Brothers, 291 E. 137th St.
New York 7, N. Y.—Harold Dessau, Inc., 25 Murray St.
New York, N. Y.—Edgeworth Industrial Supply Corp., 15 Warren St.
New York, N. Y.—Fisher Tool Co., 239 W. 18th St.
New York 13, N. Y.—Franklin Hdwe. Co., 50 Franklin St.
New York, N. Y.—Joseph F. Gleason & Co., Inc., 148 Chambers St.
New York, N. Y.—Philip Glick Supply Co., Inc., 421 W. 125th St.
New York, N. Y.—Philip Glick Supply Co., Inc., 421 W. 125th St.
New York, N. Y.—Jay Dee Specialty Co., 3883 3rd Ave.
New York 3, N. Y.—Jones Tool Co., Inc., 417 Lafayette St.
New York, N. Y.—Lilien Hdwe. & Supply Co., 490 West Broadway
Niagara Falls, N. Y.—H. D. Taylor, Co., 99 Oak St.
Norristown, Pa.—Charles Bond Co., 521-23 E. Main St.
Norristown, Pa.—Colonial Auto Supply Co., 139 W. Main St.
Norfolk, Va.—R. W. Hudgins & Son, 1-3 Commerce St.
North Hollywood, Calif.—A. F. Johnson Co., 10430 Burbank Blvd.
Oak Park 37, Michigan—Brown-Darnell Co., 12701 Capitol
Oil City, Pa.—Oil Well Supply Co.
Oklahoma City, Okla.—Capitol Steel & Iron Co., 1726 South Agnew St.
Olean, N. Y.—LeValley McLeod & Co., 1124 W. State St.
Orlando, Fla.—Moore Industrial Tooling Co., 1110 W. Pine St.
Oroville, Calif.—Oroville Auto Parts, Inc., 1340 Huntoon St.
Paducah, Ky.—Hannan Supply Co., 830 Kentucky Ave.,
Parkersburg, W. Va.—Parkersburg Rig & Reel Co.
Parkersburg, W. Va.—Tri State Tool & Supply Co., 36th at Jefferson
Passaic, N. J.—Central Engineering & Supply Co., 834 Main Ave.
Paterson, N. J.—Federal Supply Co., 47 Godwin St.
Pensacola, Fla.—Gulf Coast Marine Supply Co., 419 S. Palafox St.
Pennsauken, N. J.—Wharton Hardware & Supply Co.
Peoria 2, Ill.—Couch & Heyle, 1016 S. Adams St.
Philadelphia, Pa.—Alden Supply Co., 936 Arch St.
Philadelphia, Pa.—Charles Bond Co., 617 Arch St.
Phila. Pa.—Boyd Supply Co., 5564-5600 Baltimore Ave.
Philadelphia, Pa.—Casanave Supply Co., 2028 Sansom St.
Phila. Pa.—E. J. Driver Hdwe. Co., 2601 Germantown Ave.
Philadelphia, Pa.—Eastern Body Co., 2249 N. 31st St.
Philadelphia, Pa.—Gael-Derr & Shearer Co., 16th & Fairmount Ave.
Philadelphia, Pa.—H. M. Holden Co., 4325 Frankford Ave.
Phoenix, Ariz.—Complete Industrial Supply Co., 501 West Van Buren St.
Pittsburgh, Pa.—Amick Associates, 646 Washington Rd.
Pittsburgh 1, Pa.—Kruman Equip. Co., 3002 Penn Ave.
Pittsburgh, Pa.—Motive Parts Co. of Pa., Inc., 6399 Penn Ave.
Pittsburgh, Pa.—Oil Well Supply Co. Div. U. S. Steel, 525 William Penn Place

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Safety Products Sources

Pittsburgh 22, Pa.—Penn General Supply Co., 109-111 Wood St.
Pittsburgh, Pa.—Safety First Supply Co., 425 Magee St.
Pittsfield, Mass.—Berkshire Mill Supply Co., 47 Clapp St.
Pittson, Pa.—Medico Industries Inc., 11 Tompkins St.
Plainville, Conn.—Ideal Machinery and Supply Co.
Pontiac, Mich.—Cutting Tools & Supplies, Inc., 88 So. Cass St.
Portland 2, Maine—Wm. L. Blake & Co., 79 Commercial St.
Portland 1, Maine—E. Corey & Co., 69 W. Commercial St.
Portland, Oregon—The Beebe Co., 4444 S. W. Macadam St.
Portland 9, Oregon—F. E. Bennett, 426 N. W. Sixth Ave.
Portland 9, Oregon—Equipment Service, 1014 N. W. Hoyt St.
Portland, Oregon—Ken R. Humke Co., 211 N. W. 14th Ave.
Portland, Ore.—Milwaukee Machinery Co., 4000 S. W. Macadam Ave.
Pottstown, Pa.—J. Fegely & Son Hdwe. Co., 12 S. York St.
Pottstown, Pa.—Mayer Pollock & Co., Inc., P. O. Box 86
Providence, R. I.—Read & Purcell Co., 16 Greene St.
Raleigh, N. C.—Electrical Equipment Co., 2526 Hillsboro St.
Raritan, N. J.—Raritan Valley Hardware Co., 38-44 W. Somerset St.
Reading, Pa.—H. E. Fortna & Bro., 313 N. Third St.
Redding, Calif.—Sullivan & Crowe Equip. Co., 2637 Angelo St.
Richmond, Va.—Electrical Equipment Co., Inc., 101 Main St.
Ridgefield, N. J.—A. W. Meyer Hdwe. Co., Broad & Edgewater Ave.
Riverside, Calif.—Ken's Tool & Supply Co., 1643 LaCadena Dr.
Riverside, N. J.—S. N. Candy Co., 11 Lafayette St.
Rochester, N. Y.—Keystone Builders Supply Co., 155 Palm St.
Rochester, N. Y.—Clark Wilbeck Co., 640 Trolley Blvd.
Saginaw, Michigan—Flack Pennell Co., 320 S. Baum St.
St. Louis, Mo.—Handlan, Inc., First, Poplar, Plum Sts.
St. Paul 14, Minn.—Anderson Machine Tool Co., 2631 University Ave.
St. Paul, Minn.—R. B. Whitacre & Co., Inc., 205 S. Robert St.
Salisbury, Md.—The R. D. Grier & Sons Co., Railroad Ave. & Church St.
Salisbury, N. C.—Piedmont Mill Supply Co., P. O. Box 1450
Salt Lake City, Utah—Holland Equipment Co., 2295 South Second St.
Salt Lake City, Utah—Clyde G. Larson, 533 Elm Street
San Antonio, Texas—Industrial Service, Box 10128 Sta. 21
San Bernardino, Calif.—W. K. Equipment Co., 270 S. "E" St.
San Francisco, Calif.—Argonaut Supply Co., Inc., 1045 Brannan St.
San Francisco, Calif.—Bell Rigging Supply, 320 Clay St.
San Francisco, Calif.—Bridge-Beach & Co., 22nd & Indiana St.
San Francisco, Calif.—California Industrial Supply Co., 44 Potrero
San Francisco, Calif.—Carpenter Rigging Co., 460 Bay St.
San Francisco, Calif.—The Cookson Co., 1525 Cortland Ave.
San Francisco, Calif.—Don D. Fleming Co., Inc., 460 Bay St.
San Francisco, Calif.—Shasta Hdwe. & Supply Co., 50 9th St.
San Francisco, Calif.—Stryco Mfg. Co., 470 Natoma St.
San Gabriel, Calif.—L. S. Tool Supply, 8625 E. Las Tunas
San Jose 26, Calif.—Pacific Hdwe. & Steel Co., 950 N. Seventh St.
San Leandro, Calif.—Chico Parts & Maintenance Co., 426 Hester St.
Sandusky, Ohio—Associated Supplies, Inc., 121 W. Water St.
Santa Rosa, Calif.—Reliable Hdwe. & Steel Co., 1145 Petaluma Hill
Santa Rosa, Calif.—Stevenson Equip. Co., Second and Santa Rosa
Savannah, Ga.—Motor Supply Co., 37 W. Broad St.
Savannah, Ga.—John D. Robinson Co., 13 W. Bay St.
Schenectady, N. Y.—Syracuse Supply Co., Curry Road
Schenectady, N. Y.—R. Van Alstine Tool Co., 205 Central Ave.
Seattle, Wash.—Aronson's Hardware Co., 1415 First Ave.
Seattle, Wash.—Beebe Bros., 2724 6th Ave. So.
Seattle, Wash.—Safety & Supply Co., 119 Blanchard St.
Seattle, Wash.—Sunde & d'Evers Co., Inc., Colman Dock
Secane, Del County, Pa.—Trico Handling Equipment Co.
Shreveport 95, La.—Oliver H. Van Horn Co., Inc., Spring & Fannin Sts.
South Bend 6, Ind.—Simon Supply Co., Inc., 943 Lincolnway E.
South Dos Palos, Calif.—Yonkers & Johnson, Inc.
South Gate, Calif.—Cost Reduction Equip. Co., 5200 Chakeneo St.
Spartanburg, S. C.—Brown-Rogers-Dixon, 187 W. Broad St.
Spartansburg, S. C.—Southern Electric Service Co.
Spokane, Wash.—American Machine Co., 1026 W. Broadway
Spokane, Wash.—Hayden Tool Specialty Co., E. 1407 Sprague Ave.
Springfield 3, Mass.—W. J. Foss Co., 116 Broadway
Springfield 3, Mass.—Stacy Supply Co., 43 Taylor St.
Stratford, Conn.—Ellsworth Industrial Supply Co., 1483 Stratford Ave.
Summerville, S. C.—Southern Mill Supply Co., 309 W/S Main St.
Syracuse, N. Y.—LaValley McLeod, Inc., Court St. Road
Syracuse, N. Y.—Mid State Contractors Equip. Co., Inc., 1212 Wolf St.
Syracuse, N. Y.—Onondaga Supply Co., Inc., 344 W. Genesee St.
Syracuse 1, N. Y.—Shane & Co., 1718 N. Salina St.
Taft, Calif.—Bill Gill Welding Serv., 905 N. 6th St.
Tampa 5, Fla.—Industrial Supply Corp., 1800 2nd Ave.
Terre Haute, Ind.—Hardware Supply Co., Inc. 940 Chestnut St.
Toledo 4, Ohio—Kirkby Machy & Supply Co., 20 N. St. Clair St.
Trenton 5, N. J.—Manufacturers Selling Co., 80 N. Olden Ave.
Tucson, Ariz.—Complete Industrial Supply Co., 506 Stone St.
Tulsa, Okla.—Jones & Laughlin Steel Corp., 108 N. Trenton St.
Tulsa, Okla.—Industrial Equipment Co., 520 South Peoria
Tyler, Texas—East Texas Auto Supply Co., 213 S. Broadway
Tyler, Texas—Smith Tank & Equipment Co., Inc., P. O. Box 2014
Utica 4, N. Y.—French Mill Supply Corp., 133 N. Genesee St.
Utica 2, N. Y.—Genesee Supply Co., Inc., 405 Washington St.
Utica, N. Y.—Onondaga Supply Co., 143 Hotel St.
Utica 2, N. Y.—Smyth Despard Co., 800 Broad St.
Valdosta, Ga.—Miller Hdwe. Co., 217 E. Hill
Wallace, Idaho—Doeur d' Alene Hdwe. & Foundry Co., 612 Bank St.
Ware, Mass.—Robert Gillespie Co.
Washington, D. C.—Blake Construction Co., Inc., 1120 Connecticut Ave. N. W.
Washington, D. C.—The J. H. Elliott Co., 2101 New York Ave. N. E.
Watertown, N. Y.—Onondaga Supply Co., 249 State St.
Watertown, N. Y.—Treadwell Supply Co., Inc.
Wellston, Ohio—Oury Supply Co., 17-19 East Broadway
West Henrietta, N. Y.—James R. Hanna, Inc., 600 W. Henrietta Rd.
Wheeling, W. Va.—Trimble & Lutz Supply Co., 112 19th St.
Wildwood, N. J.—H. B. Christman & Son, 4803 Park Blvd.
Wilkes Barre, Pa.—Eastern Penna Supply Co., 56 S. Penna. Ave.
Williamsport, Pa.—E. Keeler Co., 335 W. Third St.
Willow Creek, Calif.—Willow Creek Logging Supply, Box 76
Wilmington, Calif.—Triangle Supply Co., 246 Fries Ave.
Wilmington, Del.—Jandy Inc., 3407 Lancaster Pike
Winston-Salem, N. C.—Brown-Rogers-Dixson Co., 516 N. Trade St.
Woodbury Heights, N. J.—Wm. J. O'Donnell, 1042 Chestnut St.
Worcester 8, Mass.—Industrial Supplies of Worcester, Inc. 212 Summer St.
York, Pa.—York Machinery & Supply Co., 20-28 N. Penn St.

Calgary, Alberta, Canada—A. R. Williams Machinery Co. of Vancouver, 405 Grain Exchange Bldg.
Edmonton, Alberta, Canada—A. R. Williams Machinery Western Ltd., 10206 101h Street
Halifax, N. S. Canada—Coleman Machinery Ltd.
Halifax, N. S. Canada—MicMac Agencies Ltd., 25 McLean St.
Montreal, Que. Canada—Williams & Wilson Ltd., 544 Inspector St.
Ottawa, Ont. Canada—Williams & Wilson Ltd., 136 Sparks St.
Plaissisville, Quebec, Canada—Forano Ltd.
Quebec, Que. Canada—Williams & Wilson Ltd., 65 Ste. Anne St.
Toronto, Ont. Canada—Safety Supply Co., 214 King Street E.
Toronto, Ont. Canada—Williams & Wilson Ltd., 71 Front St. E.
Vancouver, B. C. Canada—A. R. Williams Machinery Western, Ltd., 495 Railway Street
Windsor, Ont. Canada—Williams & Wilson Ltd., 1465 Tecumseh Blvd. E.
Winnipeg, Manitoba, Canada—T. S. Taylor Machinery Co., Ltd., 187 Bannatyne Ave.
Winnipeg, Manitoba, Canada—Western Machinery & Supply Co., 537 Polson Avenue
Winnipeg, Manitoba, Canada—A. R. Williams Machinery Western Ltd., 644 McGee St.

HAUS OF KRAUSE
Rockford, Michigan
**See ad page 177.

Distributors:

Bedford, Ohio—Superior Safety Shoe Co., 1478 Broadway
Buffalo, N. Y.—American Allsafe Co., Inc., 1245 Niagara St.
Charleston, W. Va.—Industrial Safety Supply Co., 5518 McCorkle Ave. S. E.
Chattanooga, Tenn.—Industrial Supply Co., P. O. Box 766
Cicero, Illinois—Safety Maintenance Co., 5139 W. 19th St.
Dallas, Texas—Settle Safety Supply Co., P. O. Box 9826
Grand Rapids, Mich.—Aden Supply Co., 1767 Whitmore Ave. N. W.
Houston, Texas—Safety Wear Inc., 1820 Franklin St.
Indianapolis, Ind.—Safety Corporation, 3702 E. Michigan St.
New Haven, Conn.—Abern Safety Equip. Corp., 2 Eld St.
New Brunswick, N. J.—Johns Inc., 310 Memorial Parkway
Newton Centre, Mass.—Hub Safety Equip. Co., 10 Nightingale Path
Philadelphia, Pa.—Arbill Industrial Shoe Co., 2207-11 Glenwood Ave.
Saginaw, Mich.—Goodrich Safety Shoe Co., 900 Lapeer St.
St. Louis Park, Minn.—Schuler Safety Shoes, 5321 Excelsior Blvd.
Vineland, N. J.—A C Safety Co., South Delsea Drive
West Hartford, Conn.—Industrial Safety Supply Co., 574 New Park Ave.

HAWKEYE PRODUCTS CORPORATION
212 Dey Building, Iowa City, Iowa

Distributors:

Albany, N. Y.—Shields Sales Corp., 319 State St.
Atlanta 3, Ga.—P. H. Nichols Co., 603 Whitehead Bldg.
Dallas, Texas—Robert A. Shuey Co., P. O. Box 35766
Kingston, Ontario, Canada—John K. McGraw Co., 296 Bagot St.
Pittsburgh 22, Pa.—George A. Kegner Co., 1721 Oliver Bldg.
St. Louis 14, Mo.—Rhodes Equipment Co., 1401 S. Brentwood Bld.
Salt Lake City, Utah—Parker Equipment Co., 138 South 2nd East
San Francisco 5, Calif.—Oliver B. Lyman Co., 55 New Montgomery St.
Wynnewood, Pa.—Gallagher Ind. Equip. Co., 29 E. Wynnewood Rd.

HAWS DRINKING FAUCET CO.
1443 Fourth St., Berkeley 10, Calif.
**See ad page 93.

Representatives:

Albuquerque, N. M.—Herlin Engineering Co., 1501 Third St., N. W., P. O. Box 1771
Ames, Iowa—Warren Rademacher, 1416 Marston St.
Atlanta 1, Ga.—C. W. Cornelius, P. O. Box 1112, Glenn Bldg.
Baltimore 18, Md.—R. B. Fulton Co., 2301 N. Charles St.
Billings, Mont.—C. L. Boyer & Co., 210 M&R Bldg., 1002 Division St.
Birmingham 5, Ala.—Durham & Ozier Co., 907 7th Ave. S.
Charlotte, N. C.—R. L. Crane, 1332 Lafayette Ave.
Chicago 12, Ill.—Jonathan-Morman Assoc., 2600 W. Madison St.
Cincinnati, Ohio—Weber & Rishell Co., 2340 Laredo St.
Cohoes, N. Y.—A. F. Nertney, 67 Garner St.
Columbus 15, Ohio—A. G. Peterson, 101 N. High St.
Dallas 5, Tex.—J. L. Fitzgerald, 4612 Cole Ave.
Dayton 2, Ohio—Weber & Rishell Co., 624 S. Ludlow St.
Denver 4, Colo.—Charles M. Dillon, 1031 Bannock St.
Detroit 27, Mich.—Gillespie Sales, 14575 Grandmount Rd.
El Paso, Tex.—Herlin Engineering Co., 1601 Bassett Ave.
Elyria, Ohio—Hildebrand & Assoc., 711 E. River St.
Honolulu, Hawaii—Arthurs, Hawaii, P. O. Box 2215, 1108 Pensacola St.
Indianapolis, Ind.—I. A. Ward, Jr. Co., 3624 Layman Ave.
Kansas City 8, Mo.—S. C. McCann Co., 2600 Oak St.
Knoxville, Tenn.—H. E. Marshall, Brown Mountain, Loop, Route #10
Los Angeles 11, Calif.—L. E. Shaffer, 807 Mateo St.
Louisville, Ky.—James C. Shearer, 3633 Windward Way, P. O. Box 5124, Cherokee Station
Memphis, Tenn.—Harwell & Rosselot, 1596 Madison Ave.
Milwaukee, Wis.—Nelson & Glass, 3347 N. 97th St.
Milwaukee 18, Wis.—Richard S. Glass, 8703 E. Daphne Rd.
Nashville, Tenn.—R. H. Harwell, 1123 Church St.
New Orleans 26, La.—D. E. Ebeling Co., P. O. Box 703, 4132 Mirabeau
New York 19, N. Y.—Walter Hein, 457 W. 57th St.
Oklahoma City 14, Okla.—O. T. Carroll, 8522 N. Georgia St.
Omaha 3, Neb.—Verne Simmonds Co., 233 Grain Exchange Bldg.
Orlando, Fla.—G. Weldon Samuel, P. O. Box 5294
Philadelphia 33, Pa.—J. N. Murphy, Corner 2nd & Wishart Sts.
Phoenix, Ariz.—Joel C. Edison Co., 3033 N. Central Ave.
Pittsburg 6, Pa.—H. H. Marcus Co., Inc., 5954 Baum Blvd.
Portland 1, Ore.—Roy Hollabaugh Co., 0333 S. W. Ganes
Richmond 21, Va.—F. E. Adams, 3122 W. Clay St.
Salt Lake City 17, Utah—Byron J. Darley, 3695 Lois Lane
San Francisco 11, Calif.—Antonio Jimenez, 19 Columbus Ave.
Seattle 99, Wash.—Charles Pacher, 422 First Ave., W.
St. Louis 20, Mo.—Walter C. Dollinger Co., 4829 Goodfellow Blvd.
St. Paul 14, Minn.—A. C. Bjerken & Assoc., 2645 University Ave.
Tampa, Fla.—Paul Zangmaster, P. O. Box 10561
Washington 17, D. C.—Barnett & Benner, 1015 Kearney St.
Webster, S. D.—Jerry Bancroft, 20 W. 9th Ave.
Worcester, Mass.—A. S. Hall Co., P. O. Box 36, West Side Station

Montreal 28, Que., Canada—R. G. K. Ward, 5719 Monkland Ave., N. D. C.
North Vancouver, B. C., Canada—Robert Somerville, Ltd., 2720 Crescentview Drive

HERCULITE PROTECTIVE FABRICS
661 Fourth Street, Newark 7, New Jersey

Distributors:

Abilene, Texas—Furniture Fabrics Co., 957 S. 3rd, P. O. Box 1115
Atlanta, Ga.—Fulton Cotton Mills, P. O. Box 1726
Baltimore 18, Md.—Baltimore Textile Co., 2436 N. Charles St.
Boston, Mass.—Redrum Fabrics, 64 Stanhope St.
Charleston, S. C.—Read Bros., 593 King St.
Chicago 22, Ill.—George B. Carpenter & Co., 401 N. Ogden Ave.
Chicago, Ill.—Clark Foam Products, 4501 S. Western Blvd.
Chicago, Ill.—Elco Products Co., 215-19 W. 31st St.
Cincinnati 14, Ohio—Miami Rubber Co., 1022 Kenner St.
Dallas, Tex.—Texas Trim, Inc., 3404 Main St.
Denver 4, Colo.—Denver Auto Trimming & Supply Co., 1120 Galapago
Detroit, Mich.—Syd Sykes Co., 120 W. Forest Ave.
Evanston, Ill.—C. M. Hoof Co., 2100 Greenleaf St.
Honolulu 2, Hawaii—Theo. H. Davies & Co. Ltd., P. O. Box 3020
Kannapolis, N. C.—Economy Supply Co., P. O. Box 826
Kansas City, Mo.—National Fabrics, 409 E. 18th St.
Los Angeles 15, Calif.—Lindsey & Hall, 1036 S. Hope St.
Los Angeles 12, Calif.—United Tent & Supply Co., 759 N. Spring St.
Minneapolis 1, Minn.—Fabric Supply Co., 137 E. Island Ave.
New Orleans, La.—Top-All Co., 917 Jefferson Highway
New York 19, N. Y.—Abeles-Lewit Co., 415 W. 55th St.
N. Seattle 9, Wash.—McDonald & Co., 414 Boren Ave.
Omaha 5, Neb.—Clark Products, Inc., 3167 Leavenworth St.
Paterson 1, N. J.—Abeles-Lewit Co., 237 Park Ave.
Philadelphia 6, Pa.—The Leroy Co., 110 Chestnut St.
Philadelphia, Pa.—Textile Commission Co., 217 Chestnut St.
Phoenix, Ariz.—Phoenix Trim & Supply Co., 706 N. 7th Ave.
Portland 14, Ore.—McDonald & Co., 930 S. E. Oak St.
Portland 5, Oregon—Vaughan Bros., 1431 S. W. Alder St.
Rochester 14, N. Y.—H. R. Howard & Sons, Inc., 60 N. Washington St.
Salt Lake City, Utah—Silver State Suppliers, 240 E. 6th St.
San Diego 2, Calif.—Earle R. King Wholesale Distr., 1455 Market St.
San Francisco, Calif.—Scovel & Sons Co., 1133 Post St.
Seattle, Wash.—Ballou & Wright, 1517 12th Ave.

Montreal 28, Que.—Anthony Foster & Sons Ltd., 6550 Upper Lacine Road
Toronto, Ont.—Anthony Foster & Sons Ltd., 294-310 Church St.
Vancouver 3, B. C., Canada—Columbia Paper Co., Ltd., 996 Homer St.
Winnipeg 10, Man.—Anthony Foster & Sons Ltd., 696 Portage Ave.

HILD FLOOR MACHINE CO., INC.
1217 W. Washington Blvd., Chicago 7, Ill.
**See ad page 63.

Branch Offices:

Los Angeles 5, Calif.—4271 W. Third St.
Memphis, Tenn.—1329 Jackson
Milwaukee, Wis.—4419 W. Center St.
New York 17, N. Y.—250 E. 43rd St.
West Palm Beach, Fla.—2032 N. Dixie

Winnipeg 1, Man., Canada—181 Pioneer Ave.

HILLYARD CHEMICAL CO.
302 N. 4th Ave., St. Joseph, Mo.
**See ad page 55.

Branch Offices:

Passaic, N. J.—Hillyard Sales Co. (Eastern), 49 Wall St.
San Jose, Calif.—Hillyard Sales Co. (Western), 1080 N. 11th St.

HIMCO — Hopfeld Industrial Manufacturing Company
734 A Street, San Rafael, Calif.
**See ad page 67.

Distributors:

Akron 20, Ohio—Acme Safety Products Co., 387 Storer Ave.
Anderson, Ind.—Howe Fire Apparatus, 1402 W. 22nd St.
Atlanta 10, Ga.—Southern Electric Equip., 1375 Lee St., S. W.
Birmingham, Ala.—W. E. "Fred" Duncan Co.
Burlingame, Calif.—Kellogg Switchboard & Supply Co., Dallas, Texas
Chicago 6, Ill.—Leich Sales Corporation, 427 W. Randolph St.
Chicago, Ill.—Stromberg-Carlson Co., Kansas City, Mo.
Cincinnati, O.—Barnes & Associates, Inc., Room 426, 307 E. 4th St.
Detroit 34, Mich.—Averill Equipment Co., 19225 Conant Ave.
Detroit, Mich.—Fire Equipment Co. Inc., 15811 Livernois
Dothan, Ala.—Mack Electric Supply Co., 412 N. Foster St.
Fargo, N. D.—Dakota Electric Supply, P. O. Box 871
Flint 1, Mich.—Gransden-Hall Co., Walnut & Poplar Sts.
Honolulu 9, Hawaii—Lynch Co., P. O. Box 540
Los Angeles 3, Calif.—Guardian Safety Equip., 7223 S. Main St.
Los Angeles 11, Calif.—American LaFrance, 2113 S. San Pedro St.
Los Angeles 58, Calif.—Hirsch Fire Equipment, 2899 E. 50th St.
Louisville, Ky.—Schmitt, Robert L. Co., 310 E. Main St.
Luverne, Minn.—Luverne Fire Apparatus, P. O. Box 155
Minneapolis, Minn.—Building Specialties Inc., 4629 Ewing Ave., So.
New York, N. Y.—Baco Co., 401 Broadway
North Branch, Minn.—General Safety Equipment
North Lake, Ill.—Automatic Electric Sales Corporation
Oakdale, Calif.—P. E. Van Pelt Inc., P. O. Box 365
Oklahoma City 18, Okla.—Utility Equipment Co., 5305 N. Santa Fe
Phoenix, Ariz.—John S. Lemmer, 511 N. 7th St.
Pico Riverta, Calif.—John F. Wardlaw, 8508 Sheridell Ave.
Pittsburgh 36, Pa.—Karkalla, Tho. A., 401 Maxwell Drive
Roseburg, Ore.—Fyr-Fyter Sales & Ser., 1934 S. W. L Innell
Saginaw, Mich.—Gransden-Hall Co., James & Outer Drive
St. Louis 10, Mo.—Kearney, James R. Corp., 4236 Clayton Ave.
San Bernardino, Calif.—Graybar Electric Co., 655 S. H St.
San Francisco, Calif. Graybar Electric Co., 1750 Alameda St.
Sausalito, Calif.—E. D. Bullard Co., Bridgeway
Sheboygan, Wis.—J. J. Koepsell Co., So. Ninth At Commerce
Shreveport, La.—Interstate Electric Cd , P. O. Box 1094
Washington 18, D. C.—Chemical Fireproofing Co., 3516 18th St., N. E.

Rydalmere, Sydney, Australia—Harper-Davidson Indus. td., 6-22 Antoine St.

HOLLAENDER MANUFACTURING CO., THE
3841 Spring Grove Ave., Cincinnati 23, Ohio

Distributors:

Akron 10, Ohio—Mau-Sherwood Supply Co., 752 N. Main St.
Albuquerque, N. M.—Metal Goods Corp., 2816 Virginia Ave., N. E.

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Atlanta 1, Ga. —Reynolds Aluminum Supply Co., 1530 Ellsworth Dr. N. E., P. O. Box 971
Atlanta 1, Ga. —Reynolds Aluminum Supply Co., 756 W. Peachtree St. N. W., P. O. Box 1367
Baltimore 5, Md. —Whitehead Metals, Inc., 4300 E. Monument St.
Baton Rouge 6, La. —Metal Goods Corp., 509 N. Acadian Thruway
Beaumont, Tex. —Metal Goods Corp., P. O. Box 630
Birmingham, Ala. —Reynolds Aluminum Supply Co., 2828 Fifth Ave. N., P. O. Box 2072
Boise, Idaho—Pacific Metal Co., 325 Grove St.
Buffalo 7, N. Y. —Whitehead Metals, Inc., 2128 Elmwood Ave.
Cambridge 39, Mass. —Whitehead Metals, Inc., 281 Albany St.
Chicago 12, Ill. —Fred C. Kramer Co., 128 S. Paulina St.
Cincinnati 29, Ohio—Williams & Co., Inc., 3231 Fredonia Ave.
Cleveland 13, Ohio—Mac-Sherwood Supply Co., 800 Lime Rd.
Cleveland 14, Ohio—Williams & Co., Inc., 3700 Perkins Ave.
Columbus 8, Ohio—Williams & Co., Inc., 900 Williams Ave.
Corpus Christi 1, Tex. —Metal Goods Corp., P. O. Box 2159
Dallas 35, Tex. —Metal Goods Corp., 6211 Cedar Springs Rd.
Decatur, Ill. —Metal Goods Corp., 16 Crestview Dr.
Denver 16, Colo. —Metal Goods Corp., 4343 Holly St.
Des Moines, Iowa—Metal Goods Corp., 6216 Boston Ave.
Evansville 14, Ind. —Metal Goods Corp., 1422 Adams St.
Fort Worth, Tex. —Metal Goods Corp.
Houston 1, Tex. —Metal Goods Corp., 711 Milby St., P. O. Box 1452
Jackson, Miss. —Metal Goods Corp., 781 Raymond Rd.
Jacksonville, Fla. —Reynolds Aluminum Supply Co., 1612 E. 8th St.
Harrison, N. J. —Whitehead Metals, Inc., 1000 S. Fourth St.
Hoboken, N. J. —Cornell & Underhill, Inc., 1300 Jefferson St.
Honolulu 14, Hawaii—Aluminum Products Hawaii, Ltd., 669 Sheridan St.
Louisville, Ky. —Reynolds Aluminum Supply Co., Fern Valley Rd. near Grade Lane
Louisville 3, Ky. —Williams & Co., Inc., 1109 S. Preston St.
Los Angeles 23, Calif. —McKinley Equip. Corp., 1557 Esperanza St.
Los Angeles 22, Calif. —Pacific Metals Co., Ltd., 2187 S. Garfield Ave.
Memphis 6, Tenn. —Metal Goods Corp., 1970 S. Latham St.
Memphis, Tenn. —Reynolds Aluminum Supply Co., 703 N. Royal Ave.
Miami, Fla. —Reynolds Aluminum Supply Co., 3690 N. W. 52nd St., P. O. Box 926-International Airport Branch
Nashville 4, Tenn. —Metal Goods Corp., 4312 Leland Lane
Nashville, Tenn. —Reynolds Aluminum Supply Co., Harrison St. at 7th
New Orleans 9, La. —Metal Goods Corp., 432 Julia St., P. O. Box 286
New York 14, N. Y. —Whitehead Metals, Inc., 303 W. 10th St.
N. Kansas City 16, Mo. —Metal Goods Corp., 1300 Burlington Ave.
Philadelphia 40, Pa. —Whitehead Metals, Inc., 1955-75 Hunting Park
Phoenix, Ariz. —Pacific Metals Co. Ltd., 909 N. First St.
Pittsburgh 33, Pa. —Williams & Co., Inc., 901 Pennsylvania Ave.
Portland 9, Ore. —Pacific Metal Co., 305 N. W. Park Ave.
Omaha 4, Nebr. —Metal Goods Corp., 5818 Northwest Dr.
Raleigh, N. C. —Reynolds Aluminum Supply Co., 1431 Courtland Dr.
Richmond, Va. —Reynolds Aluminum Supply Co., 1910 Petersburg Pike, P. O. Box 3—F
Rochester 10, N. Y. —Whitehead Metals, Inc., 181 Winton Rd., N.
Salt Lake City 16, Utah—Metal Goods Corp., 212 Beason Bldg.
Salt Lake City 1, Utah—Pacific Metals Co. Ltd., 261 W. 5th South
San Antonio 5, Tex. —Metal Goods Corp., 305 Kallison Bldg.
San Diego 1, Calif. —Pacific Metals Co. Ltd., 1537 India St.
San Francisco 7, Calif. —Pacific Metals Co. Ltd., 1900 Third St.
Savannah, Ga. —Reynolds Aluminum Supply Co., 309 Stiles Ave.
Seattle 4, Wash. —Pacific Metal Co., 4150 First Ave., S.
Spokane 4, Wash. —Pacific Metal Co., North 4 Lee St.
St. Louis 14, Mo. —Metal Goods Corp., 8800 Page Blvd.
Syracuse 4, N. Y. —Whitehead Metals, Inc., Deere & Tarbell Rds.
Toledo 12, Ohio—Williams & Co., Inc., 946 Kane St.
Tulsa 13, Okla. —Metal Goods Corp., 1623 N. 71st East Ave.
Wichita 16, Kan. —Metal Goods Corp., 2971 S. Madison
Windsor, Conn. —Whitehead Metals, Inc., Hartford-Springfield Expressway

HOLMIN, W. A., CORPORATION
1325 Seventh St., Rockford, Ill.

Factory Representatives:

Boston 15, Mass. —Donald T. Hankins, 159 Huntington Ave.
Brooklyn 13, N. Y. —Irv Brown Co., 1500 Carroll St.
Burlingame, Calif. —H. L. Newman Co., 1299 Bayshore Hwy.
Chicago 34, Ill. —Bruce Cumming & Associates, Inc., 6029 W. Belmont
Denver 22, Colo. —Connors, Inc., 5403 E. Evans Ave.
Jacksonville 11, Fla. —L. E. Barnhart, 1003 Gunka Rd.
Honolulu 12, Hawaii—John J. Harding Co., Ltd., 1514 Kona St.
Los Angeles 34, Calif. —Wes Alderson Co., 3050 Overland Ave.
San Antonio 6, Tex. —W. R. Retzloff Co., P. O. Box 1786
Seattle 1, Wash. —William R. Lanphear Co., 3215 Western Ave.

Caguas, Puerto Rico—Matanzo Hnos., Inc., P. O. Box 696

Export Agent:

New York 16, N. Y. —Rocke International Corp., 13 E. 40th St.

HOLT MFG. CO.
669 20th St., Oakland 12, Calif.

HOOS RUBBER PRODUCTS
Watertown 72, Mass.

District Sales Offices:

Allen Park, Mich. —16500 Oakwood Blvd.
Atlanta, Ga. —1721 DeKalb Ave., P. O. Box 4509
Baltimore 1, Md. —8-14 S. Eutaw St.
Brisbane, Calif. —325 Valley Drive
Chicago 44, Ill. —4646 W. Lake St.
Cleveland 13, Ohio—311 St. Claire Ave. N. W.
Dallas 22, Tex. —1400 Turtle Creek Blvd., P. O. Box 6185
Hialeah, Fla. —1030 E. 14th St.
Los Angeles 23, Calif. —3141 E. 12th St., P. O. Box 23606
Minneapolis 16, Minn. —800 Turner's Crossroads South
New York 13, N. Y. —211-13 W. Broadway
Philadelphia 34, Pa. —955 E. Erie Ave.
Pittsburgh 33, Pa. —1106 Reedsdale St.
Seattle 4, Wash. —1 Hanford St.
St. Louis 3, Mo. —1529 Washington Ave.
San Francisco 24, Calif. —P. O. Box 24001
Watertown 72, Mass. —139 Cypress St.

HORIZON INDUSTRIES
400 Upper Midwest Bldg., Minneapolis 1, Minn.
**See ad page 60.

Distributors:

Albuquerque, N. M. —Green's Sanitary Specialties, 2133 Carlisle Blvd. N. E.
Allentown, Pa. —Class Janitor Supply Co., 1633 Airport Rd.
Akron 11, Ohio—The Rohner Co., 763-775 S. High St.
Anchorage, Alaska—John M. Aspiund Co., 4005 Spenard Rd.
Atlanta 7, Ga. —Floors, Inc., 840 DeKalb Ave. N. E.
Baltimore 23, Md. —Baer Paper Co., Inc., 423 N. Smallwood St.
Boston 18, Mass. —W. D. Stetson Co., 64 E. Brookline St.
Buffalo 25, N. Y. —Hubbs & Howe Co., 2200 Harlem Rd.
Cincinnati 2, Ohio—National Maintenance Materials, Inc., 117-119 Sycamore St.
Cleveland 8, Ohio—Lindsey Sanitation Co., 993 E. 131st St.
Columbus 15, Ohio—Rose Chemical Products, Inc., 380 N. Front St.
Corning, N. Y. —New York State Germicide Co., 115 W. Fourth St.
Corry, Pa. —Wilcox Products, 112 Pennsylvania Ave.
Dallas, Tex. —H. G. Meyer & Son, 1306 Canton
Dayton 2, Ohio—Thompson's Supply Co., 201 E. 6th St.
Denver 1, Colo. —Scientific Supply Co., Inc., 800 Water St.
Detroit 7, Mich. —Bockstanz Bros. Co., 1205 Beaufait St.
Evansville, Ind. —Pro-Tex-All Co., Inc., 223 N. W. Second St.
Fort Wayne, Ind. —Moellering Supply Co., 824 W. Main St.
Hartford, Conn. —Superior Sales Co., Inc., 35 Bartholomew Ave.
Hempstead, N. Y. —I. Janvey & Sons, 218 Front St.
Houston 23, Tex. —Germalene Chemical Co., 4751 Gulf Freeway
Indianapolis 4, Ind. —Globe Industrial Supplies, 546 W. Washington St.
Jacksonville, Fla. —All-Brite Sales Co., 1906 Liberty St.
Kansas City 5, Mo. —Watson Supply Co., 138 W. 6th St.
Knoxville, Tenn. —Institutional Sanitary Supplies Co., 2107-09 Grand
Los Angeles 1, Calif. —Easterday Supply Co., 901 E. 61st St.
Los Angeles 15, Calif. —Peerless Products Co., 1306 S. Figueroa
Louisville 14, Ky. —Konway Chemical Co. of Kentucky, 6216 Strawberry
Lubbock, Tex. —Marquis Supply Co., 811 Ave. H
Madison 3, Wis. —Hoffman Brothers Chemical & Supply Co., 117 S. Webster
Miami, Fla. —Barco Chemicals Division, 7760 N. E. 4th Court
Millvale, Pittsburgh 9, Pa. —Bee-Kim Co., 134 North Ave.
Milwaukee 3, Wis. —Klein Kleen-All Co., 1141 N. Third St.
Nashville 4, Tenn. —Taylor Supply Co., Inc., 625 Seventh Ave. S.
New Haven, Conn. —Top Products, Inc., 200 Winchester Ave.
New York 14, N. Y. —Astor Supply Co., Inc., 140 Perry St.
New York 12, N. Y. —Sterling Sanitary Supply Corp., 99 Greene St.
Omaha, Neb. —Goodwin Supply Co., 1214 Farnam St.
Orlando, Fla. —Barnette's Janitor Supplies, 1111 W. Central
Philadelphia 19, Pa. —Gafer & Hults, Inc., 22 W. Horter St.
Plattsburgh, N. Y. —L. H. Buck Co., Inc., 210 Oak St.
Pleasantville, N. J. —Atlantic Janitor & Paper Supply Co., 64 E. Washington Ave.
Richmond 20, Va. —Bldgs. Equip. & Supply Corp., 811 W. Broad St.
Rochester 4, N. Y. —Greene's, Building Maintenance & Supplies, Inc., 45 Scio St.
San Antonio, Tex. —Braunig Distributing Co., 1418 W. Ashby Pl.
San Francisco 2, Calif. —Colberg Supplies, 777 Golden Gate Ave.
Santa Ana, Calif. —Kleen-Line Corp., 2050 S. Main St.
Scotia 2, N. Y. —Bob's Household Supply Co., 8 Knickerbocker Rd.
Seattle 4, Wash. —Packer-Scott Co., 1232 Sixth Ave. S.
Springfield, Mo. —Ozark Paper & Janitor Supply Co., Inc., 313-315 S. Ave.
St. Louis 11, Mo. —Frontier Chemical Products, Inc., 119 E. Soper St.
St. Paul 1, Minn. —Brissman-Kennedy, Inc., 136 E. Tenth St.
St. Paul 14, Minn. —Sanitary Products Co., 2430 University Ave.
St. Petersburg, Fla. —Harrison Products, Inc., 2510 Emerson Ave. S.
Toledo 3, Ohio—The Mellocraft Co., 1320 Locust St.
Tucson, Ariz. —Sanitary Supply Co., 536 E. 9th St.
Tulsa 1, Okla. —Moulder-Oldham Co., 216 N. Denver
Washington, D. C. —Bay-Ran Janitor Supply Co., 1433 Newton St. N. W.
Wausau, Wis. —C. T. L. Co., Inc., 1710 W. Stewart Ave.
West Palm Beach, Fla. —Picard Chemical Co., Congress & Creek Rds.
Wilmington, Del. —Superior Sanitary Supply Co., 306 Shipley St.

HORNIK, FREDERICK
182 Avenue S., Brooklyn 23, N. Y.

HOUGHTON, E. F., & CO.
303 W. Lehigh Ave., Philadelphia 33, Pa.

Branch Offices:

Baltimore 23, Md. —6 S. Schroeder St.
Chicago 6, Ill. —222 W. Adams St.
Carrollton, Ga.
Cleveland 3, Ohio—4500 Euclid Ave.
Detroit 2, Mich. —6560 Cass Ave.
Houston 2, Tex. —701 N. San Jacinto St.
Kensington, Conn. —10 Main St.
Los Angeles 58, Calif. —2445 E. 26th St.
New York 36, N. Y. —55 W. 42nd St., Rm. 1104-A
Philadelphia 33, Pa. —303 W. Lehigh Ave.
Pittsburgh 22, Pa. —Bessemer Bldg., Rm. 401
Portland 14, Ore. —717 S. E. Main St.
Seattle 4, Wash. —90 Dearborn St.
St. Louis 26, Mo. —Rm. 313, 9705 Highway 66
S. San Francisco, Calif. —54 Tanforan Ave.

Montreal 29, Que., Canada—7495 Chester Ave.
Toronto 9, Ont., Canada—P. O. Box 113, Sta. D.

HUNTINGTON LABORATORIES, INC.
Huntington, Ind.

Branch Offices:

Chicago 44, Ill. —4745 W. Washington St.
Detroit 2, Mich. —7765 John Lodge Hwy.
Philadelphia 35, Pa. —6300 State Rd.

Toronto, Ont., Canada—86 Parliament St.

HYGIENE RESEARCH INC.
684 Broadway, New York 12, N. Y.
**See ad pages 81 and 183.

HYNSON, WESTCOTT & DUNNING, INC.
Charles & Chase Streets, Baltimore 1, Md.

HY-TEST SAFETY SHOES
Div. International Shoe Co.
1509 Washington Ave., St. Louis 66, Mo.
**See ad pages 160 and 161.

HYTROL CONVEYOR CO., INC.
1959 S. 54th St., Milwaukee 19, Wis.

Distributors:

See "Conveyors" in Yellow Pages of Telephone Book.

IDEAS, INC.
214 Ivinson Ave., Laramie, Wyoming

INDUSTRIAL ACOUSTICS CO., INC.
341 Jackson Ave., New York 54, N. Y.
**See ad page 97.

Sales Representatives:

Albany 5, N. Y. —F. R. Foote Co., Inc., 23 Pinehurst Rd.
Albuquerque, N. M. —Barnhart-Dwyer Engrg. Co., 2500 Garfield Ave. S. E.
Atlanta, Ga. —Barrow & Daugherty, 305 Techwood Dr. N. W.
Atlanta 8, Ga. —O. Glenn Saldereth & Assoc., 423 Collier Rd., N. W.
Atlanta 3, Ga. —Grove Hearing Service, 370 Alberta Terr. N. E.
Austin 5, Tex. —Lundecke Engineering Co., 1007 W. 34th St.
Baltimore 1, Md. —F. C. Clifford, Inc., 245 W. Chase St.
Bayside 60, N. Y. —Spectrum Research Assoc., 10-40 211 St.
Boise, Idaho—Mechanical Equip. & Eng., Inc., 920 N. Orchard
Buffalo 2, N. Y. —E. W. Paullin, Inc., 126 Pearl St.
Charlotte, N. C. —L. R. Gorrell Co., P. O. Box 6228
Chicago 6, Ill. —Ray O. Nelson Co., 330 S. Wells St.
Cincinnati 2, Ohio—S. K. Foster & Assoc., Inc., 136 E. 4th St.
Cincinnati 38, Ohio—G. V. Sutfin Co., P. O. Box 43, Western Hills Sta.
Clayton 5, Mo. —Kansas City Equip. Co., P. O. Box 17
Clearwater, Fla. —R. J. Clark Equip. Co., Inc., 1123 Seminole St.
Cleveland 6, Ohio—D. B. Billington Co., 12417 Cedar Rd.
Cleveland 13, Ohio—Lowry Dietrich Co., 316 Marion Bldg.
Cleveland, Ohio—Maico Hearing Service of Cleveland, Inc., 611 Park Bldg., 140 Public Square.
Columbus 14, Ohio—H. Dewey Jones Co., 68 W. N. Broadway
Dallas 4, Tex. —L. V. Nicastro Co., 2909 Maple Ave.
Dayton 9, Ohio—Frey Equip. Co., 909 Irving Ave.
Dayton 2, Ohio—Lowry Dietrich Co., 333 W. First St.
Deerfield, Ill. —E. E. Hutt & Co., Inc., P. O. Box 296
Denver 2, Colo. —Stiles Sales Co., 309 Cooper Building
Des Moines, Iowa—Ray R. Goodwin Co., 1405 29th St.
Detroit 35, Mich. —Elliot W. Higgins, 20009 James Couzens Hwy.
Detroit 20, Mich. —D. T. Randall & Co., 530 Livernois Ave.
Fort Myers, Fla. —Arthur H. Lynch & Assoc., Inc., 406 Danley Dr., Page Park
Fort Myers, Fla. —Arthur H. Lynch & Assoc., Inc., 35 W. North Shore
Fresno, Calif. —Norman S. Wright & Co., 1361 Abby St.
Grand Rapids 3, Mich. —D. T. Randall & Co., 320 E. Fulton St.
Hempstead, Long Island, N. Y. —Maico Hearing Center of Hempstead, 9 Center St.
Houston, Tex. —Audiophone Hearing Aid Center, Inc., 801 Walker St.
Houston, Tex. —C. A. Richards Co., 5008 Kelvin St.
Indianapolis 2, Ind. —A. G. Allen & Co., 119 E. 16th St.
Indianapolis 4, Ind. —Burrill Special Instruments, 624 Hume Mansur Building
Jackson 1, Miss. —Robert Porter, 314 Dixie Building
Jackson, Miss. —Robert Porter, 414 S. State St.
Jacksonville, Fla. —R. J. Clark Equip. Co., Inc., Suite 10, 1628 San Marco Blvd.
Kansas City 8, Mo. —Heaven Engineering Co., 1529 Oak St.
Kansas City 12, Mo. —Kansas City Equip. Co., 4706 Holly St.
Little Rock, Ark. —The Vinsant Co., P. O. Box 2536
Los Angeles 26, Calif. —Norman S. Wright & Co., 625 N. Alvarado St.
Louisville 7, Ky. —Ogle Engineering Sales, P. O. Box 7074
Lubbock, Tex. —The Houston Co., 2109 Ave. "Q", Rm. 228
Memphis, Tenn. —Hurston-Conaway, Inc., 812 S. Highland
Metuchen, N. J. —John B. Hewett Co., Inc., 213 High St.
Miami 50, Fla. —R. J. Clark Equip. Co., Inc., 7790 N. W. 7th Ave.
Miami 38, Fla. —Arthur H. Lynch & Assoc., Inc., 261 N. E. 114th St.
Milwaukee, Wis. —Air Equip., Inc., 2604 W. Hopkins St.
Minneapolis 6, Minn. —E. J. Baker Co., 3460 Minnehaha Ave.
Minneapolis, Minn. —Maico Special Instruments, 2849 Burnham Blvd.
Missoula, Mont. —Engineering Equip. Sales, 107 E. Main
Mobile, Ala. —Jack Chichester, 1873 Grant St., P. O. Box 6095
Nahsville, Tenn. —Vernon S. Tupper Co., 206 Tuck Bldg.
New Orleans 24, La. —W. C. Murphy & Assoc., 6270 General Diaz St.
New York 36, N. Y. —Dunshaw, Inc., 130 W. 42nd St.
New York 17, N. Y. —John B. Hewett Co., Inc., 219 E. 44th St.
New York 17, N. Y. —J. W. Manny, Inc., 48 E. 43rd St.
Norfolk 10, Va. —J. A. Hagan Jr. & Co., 820 W. 21st St.
Northbrook, Ill. —Gordon N. Stowe Assoc., 1728 Chapel Court
Oklahoma City, Oklahoma—Beltone Hearing Service, 2001 Liberty Bank Building
Oklahoma City 4, Oklahoma—Heat Transfer Equip. Co., 613-A S. W. Fourth St.
Omaha 4, Neb. —Ray R. Goodwin Co., 2748 N. 63rd St.
Orlando, Fla. —R. J. Clark Equip. Co., Inc., P. O. Box 6913
Philadelphia, Pa. —J. A. Brown Co., 1616 Walnut St.
Philadelphia 3, Pa. —Maico of Pa., 231 S. 17th St.
Philadelphia 25, Pa. —James R. McQuaide, 2042 Amber St.
Phoenix, Ariz. —Norman S. Wright & Co., 2641 E. Adams St.
Phoenix, Ariz. —Purvis & Co., 4571 Calle Redonda
Pittsburgh 22, Pa. —Beltone Pittsburgh Co., 810 Liberty Ave.
Pittsburgh 36, Pa. —Main Office, Lowry Dietrich Co., 703 Clairton
Pittsburgh 34, Pa. —P. C. McKenzie Co., P. O. Box 10396
Pittsburgh 33, Pa., Ward & Black Engrg. Sales Co., 940 Western Ave.
Portland 9, Ore. —Corvek Medical Equip. Co., 1005 N. W. 16th Ave.
Portland 1, Ore. —Norman S. Wright & Co., 3605 S. W. Corbett St.
Providence 4, R. I. —Empire State Equip. Co., 34-38 Randall St.
Raleigh, N. C. —L. R. Gorrell Co., 602 W. Morgan St.
Rexford, N. Y. —Walter Smachlo, RFD #1
Rochester 7, N. Y. —A. R. Bowman Co., 75 College Ave.
Sacramento 14, Calif. —Norman S. Wright & Co., 1102 "T" St.
St. Louis 77, Mo. —H. C. Sharp Co., P. O. Box 7038
Salt Lake City 1, Utah—Gritton & Wilde, 205 Dooly Bldg.
Salt Lake City 10, Utah—Utah Pioneer Corp., 335 W. 1st St.
San Antonio, Tex. —Southern Acoustics Co., P. O. Box 11415
San Diego, Calif. —Southwest Supply Co., 510 Eighth Ave.
San Diego 1, Calif. —Norman S. Wright & Co., 3659 Keating St.
San Francisco 2, Calif. —Laboratory Equip. Co., 532 McAllister St.
San Francisco 3, Calif. —Norman S. Wright & Co., 1015 Folsom St.
Santa Monica, Calif. —Industrial Acoustics Co., Inc., 1532 3rd St.

Continued on next page

***SAFETY PRODUCTS INDEX** begins on page 301*

Safety Products Sources

Seattle 99, Wash.—Noise Control of Seattle, Inc., 600 W. Nickerson St.
Seattle 3, Wash.—Norman S. Wright & Co., 3668 Albion Place
Shreveport, La.—J. W. Cherry Co., 151 Olive St.
Shreveport, La.—Louisiana Audiometer Co., 1210 Gilbert Ave.
South Birmingham 9, Ala.—Charles Minor Acoustics, 2309 22nd Ave.
Spokane 4, Wash.—Norman S. Wright & Co., S. 125 Stevens St.
Syracuse 4, N. Y.—J. W. Stevens Co., 320 Tracy St.
Toledo 4, Ohio—Maico Toledo Co., 420 St. Clair St.
Toledo 2, Ohio—Skeldon Power Equip. Co., 423 13th St.
Washington 7, D. C.—Allen, Mitchell & Co., 1053 31st St., N. W.
West Concord, Mass.—Grason-Stadler Co., 15 Winthrop St.
West Hartford, Conn.—Charles A. Phelan, 8 Shady Lane
West Roxbury 32, Mass.—The Airadyne Co., 1826 Centre St.
Whittier, Calif.—C. E. Pickup Co., 134 N. Greenleaf Ave.
Wichita 2, Kan.—Ray F. Bauer Co., 434 N. Rock Island

Amsterdam, W. Holland—Koopman & Co., Technische Handel-
Calgary, Alberta, Canada—General Equip. Ltd., 1011 17th Ave. S. W.
Edmonton, Alberta, Canada—General Equip. Ltd., 10564 96th St.
Francaise D'Audiologie, 162-164 Boulevard Haussman
Graf-Adolf-Platz 1, Western Germany—Technikon Gesellschaft, fur Industriebedarf mbH., Dusseldorf, ann
Halifax, Nova Scotia, Canada—Purves Industrial Sales, P. O. Box 1532
131 Roy Bldg.
Johannesburg, South Africa—Leigh & Hurwitz, Ltd., P. O. Box 3236
London, W. 1., England—Industrial Acoustics Co., Ltd., 50 Mount St.
Maatschappij N. V., Gebouw Atlanta Stadhouderskade 6, Postbox 8049
Moncton, New Brunswick, Canada—Acadia Distr. Ltd., P. O. Box 688
Montreal 16, Que., Canada—Tepro Industrial Ltd., P. O. Box 190, Mount Royal Station
Paris 8e, France—Dr. J. E. Fournier, Le Directeur, Compagnie
Regina, Saskatchewan, Canada—Wehr Air Equip. Co. Ltd., 1237 Albert St.
Reykjavik, Iceland—Einarsson & Palsson, Inc., Skolavordustig 3A, P. O. Box 1244
Rio de Janeiro, Brazil—Centro Auditivo Telex, Av. Rio Branco 138-13.°
Santurce, Puerto Rico—Dunshaw Puerto Rico Inc., 312 De Diego Ave.
Stockholm 'O', Sweden—Danavox, Majorsgatan 17
Tokyo, Janan—Nippon S. T. Johnson Sales Co., Ltd., No. 10 Kanda-Kamakuracho, Chiyoda-Ku
Toronto 1, Ont., Canada—Kleenaire Equip. Ltd., 199 Bay St. (5th Floor)
Vancouver, British Columbia, Canada—General Equip. Ltd., 224 W. Fifth Ave.
Winnipeg, Manitoba, Canada—Wehr Air Equip. Co. Ltd., 96 Gertie St.

INDUSTRIAL AIDS CO.
Locust Ave., Locust, N. J.

INDUSTRIAL GLOVES CO.
700 Garfield St., Danville, Illinois

INDUSTRIAL PRODUCTS CO.
2850 N. 4th St., Philadelphia 33, Pa.
**See ad page 142.

Branch Offices:

Orange, N. J.—IPCO Safety Products Co., 400 S. Jefferson St.

INLAND STEEL COMPANY
30 West Monroe Street, Chicago 3, Illinois

Distributors:

Los Angeles 15, Calif.—Lawrence-Rutt Co., 714 W. Olympic Blvd.

St. Laurent, Que., Canada—Hugh Russell & Sons, Ltd., 420 Stinson St.

INSTITUTE OF INDUSTRIAL LAUNDERERS
1833 Jefferson Place, N.W., Washington 7, D.C.

Branch Offices:

Member companies are located in all States.

INTERNATIONAL FILM BUREAU, INC.
332 S. Michigan Ave., Chicago 4, Ill.
**See ad page 289.

INTERNATIONAL LATEX CORPORATION
Empire State Bldg., 350 Fifth Ave., New York 1, N. Y.

Branch Offices:

Branches in Dover, Del. (main office and factory), Chicago, Ill., San Francisco, California, and throughout the world.

Distributors:

Distributors in practically all States in U. S. A.

INVINCIBLE VACUUM CLEANER MFG. CO.
14th & Davis Sts., Dover, Ohio

IRON AGE SAFETY SHOE DIVISION
H. Childs & Co., Inc.
1205 Madison Ave., Pittsburgh 12, Pa.
**See ad pages 168 and 169.

Branch Offices:

Bellaire, Tex.—5113 Pocahontas
Buffalo 9, N. Y.—47 E. Utica St.
Harvey, Ill.—314 E. 143rd St.
Huntington, W. Va.—219 Holswade Dr.
Indianapolis, Ind.—124 E. 49th St.
Los Angeles, Calif.—817 S. Gramercy Pl.
Lynchburg, Va.—1601 Somerset Dr.
Marysville, Ohio—209 E. 11th St.
Monroe, La.—302 Columbia Ave.
North Wales, Pa.—Stump Rd.
Royal Oak, Mich.—27676 Shagbark
Saugus, Mass.—5 Walnut St.

Distributors:

Seattle 1, Wash.—Currin-Greece Shoe Mfg. Co.

IRVING SUBWAY GRATING CO., INC.
50-20 27th St., Long Island City 1, N. Y.

Distributors:

Oakland 20, Calif.—18-20 Tenth St.

Mexico 18, D. F., Mexico—Cia Enrejados Irving de Mexico, Apartado Postal 29897

JACKSON PRODUCTS, AIR REDUCTION SALES COMPANY
Division of Air Reduction Company, Inc.
31739 Mound Rd., Warren, Michigan
**See ad page 129.

JAY, D., PRODUCTS CO., INC.
P. O. Box 797, Newark 1, N. J.

JOHNS-MANVILLE CORPORATION
22 East 40th Street, New York 16, N. Y.

Branch Offices:

Atlanta 3, Ga.—101 Marietta St.
Boston 14, Mass.—1301 Causeway St.
Chicago 54, Ill.—Merchandise Mart Plaza
Cincinnati 2, Ohio—Central Parkway at Walnut St.
Clayton, St. Louis 5, Mo.—7912 Bonhomme Ave.
Cleveland 15, Ohio—3101 Euclid Bldg.
Denver 2, Colo.—1755 Glenarm Place
Detroit 2, Michigan—832 Fisher Bldg.
Houston 4, Tex.—3115 Blodgett St.
Los Angeles 5, Calif.—611 S. Catalina St.
Milwaukee 9, Wis.—4260 N. Teutonia Ave.
Minneapolis 16, Minn.—3100 West Lake St.
New Orleans 19, La.—2400 Canal St.
New York 16, N. Y.—270 Madison Ave.
Philadelphia 6, Pa.—The Mall Bldg., Chestnut at 4th
Pittsburgh 19, Pa.—2228 Koppers Building
San Francisco 5, Calif.—116 New Montgomery St.
Seattle 3, Washington—4304 Stone Way

JOHNSON LADDER SHOE CO., INC.
630 Water St., Eau Claire, Wis.
**See ad page 70.

JOHNSON-WILLIAMS, INC.
2625 Park Blvd., Palo Alto 9, California
**See ad page 254.

Distributors:

Atlanta 5, Ga.—Municipal Fire & Safety Co., P. O. Box 11808 N. Side Station
Baton Rouge 6, La.—Guardian Safety Equipment Co., 3615 Capitol Heights Ave.
Boston 10, Mass.—General Equip. Corp., 261 Franklin St.
Buffalo 23, N. Y.—Watson Sales Co., Inc., 1362 Kenmore Ave.
Chicago 39, Ill.—Universal Safety Equip. Co., 5115 W. Diversey Ave.
Cleveland, Ohio—Safety First Supply Co., 4251 W. 35th St.
Dallas 19, Tex.—Engineering Supply Co., 6000 Denton Dr.
Dayton 2, Ohio—Dayton Safety Supply Co., 11 Longworth St.
Detroit, Mich.—Averill Equip. Co., 19225 Conant Ave.
Houston, Tex.—Guardian Safety Equip. Co., 200 Sandman St.
Kansas City, Mo.—Safety, Inc., 17 E. 31st St.
Knoxville, Tenn.—Safety Equip. Distr. Co., 832 Main Ave., S. W.
Linden, N. J.—Guardian Safety Equip. Co., 37 E. 21st St.
Los Angeles 3, Calif.—E. D. Bullard Co., 6719 S. Figueroa St.
Memphis, Tenn.—Clement Safety Equip., Inc., 720 S. Third St.
Milwaukee 15, Wis.—Universal Safety Equip. Co., 3155 S. 7th St.
New Haven, Conn.—Abern Safety Equip. Co., 2 Eld St.
Oklahoma City, Okla.—Mid-Continent Transmission & Supply Co., 1413 W. Reno
Orange, N. J.—IPCO, 400 S. Jefferson
Pittsburgh 19, Pa.—Safety First Supply Co., 425 Magee St.
Port Chester, N. Y.—Union Industrial Equip. Corp., 40 Beech St.
Portland 14, Ore.—Sanderson Safety Supply Co., 816 S. E. Hawthorne
St. Louis, Mo.—Safety, Inc., 2608 Olive St.
St. Paul, Minn.—Continental Safety Equip. Inc., 1551 Selby Ave.
Salt Lake City, Utah—Universal Safety & Fire Equip. Co., Inc., 727 S. W. Temple St.
San Francisco 7, Calif.—Brenton Equip. Co., 374 Brannan St.
Sausalito, Calif.—E. D. Bullard Co., 2680 Bridgeway
Seattle, Wash.—Safety & Supply Co., 115 Blanchard St.
Tampa, Fla.—Safety Equip. Co. of Florida, 9505 Florida Ave.
Toledo 10, Ohio—Safety First Supply Co., 858 W. Delaware Ave.
Wichita, Kan.—Mid-Continent Transmission & Supply Co., 2027 N. Broadway
Upper Darby, Pa.—Technical Products Co., 315 Sherbrook Blvd.

Vancouver 4, B. C., Canada—Fleck Bros., Ltd., 110 Alexander St.
Toronto, Ont., Canada—Safety Supply Co., 214 King St. E.
Safety Supply Co. w/their various branches in Calgary, Halifax, Montreal, Winnipeg, Edmonton, Vancouver, Ottawa, Trail and Regina—Canada

JOHNSON'S WAX
1525 Howe St., Racine Wis.

Branch Offices:

Atlanta 10, Ga.—979 Donnelly Ave., S. W.
Baltimore 23, Md.—232 N. Franklintown Rd.
Buffalo 10, New York—290-302 Larkin St.
Burlingame, Calif.—50 Broderick Rd.
Chicago 54, Ill.—1477 Merchandise Mart Plaza
Cincinnati 37, Ohio—1005 Meta Drive
Cleveland 35, Ohio—13619 Enterprise Ave.
Dallas 35, Tex.—6417 Cedar Springs Ave.
Denver 2, Colo.—1863 Wazee St.
Detroit 27, Michigan—14331 Schaefer Highway
High Point, N. C.—615 Ward St.
Houston 1, Tex.—P. O. Box 1634
Indianapolis 19, Indiana—500 Kitley Ave.
Kansas City 16, Mo.—1233-39 Burlington Rd.
Long Island City 1, N. Y.—33-16 Woodside Ave.
Los Angeles 22, Calif.—2311 S. Eastern Ave.
McKees Rocks, Pa.—P. O. Box 310, Sexton Road
Minneapolis 14, Minnesota—650-25th Ave., S. E.
Memphis 7, Tenn., 1340 Thomas St.
Natick, Mass.—1075 Worcester Rd.
Philadelphia 32, Pa.—1324 Clearfield St.
St. Louis 39, Mo.—3218 S. Brannon Ave.
Seattle 4, Wash., 3667 First Ave., South

JONAC INC.
6128 N. Woodstock St., Philadelphia 38, Pa.
**See ad page 179.

Branch Offices:

New York City 38, N. Y.—44 Cliff St.

JONES AND COMPANY
861 Broad St., Providence 7, R. I.
**See ad page 109.

JONES & LAUGHLIN STEEL CORPORATION
Wire Rope Division
Muncy, Pa.

JOY MFG. CO.
Electrical Prod. Div.
1201 Macklind Ave., St. Louis 10, Mo.

Branch Offices:

Chicago, Ill.—560 W. Washington Blvd.
Cleveland, Ohio—16141 Puritas Ave.
Compton, Calif.—19501 S. Santa Fe
Detroit, Mich.—17615 W. McNichols Rd.
Houston, Tex.—P. O. Box 19124
Philadelphia, Pa.—1420 Walnut St.

JUNKIN SAFETY APPLIANCE CO., INC.
3121 Millers Lane, Louisville 16, Ky.
**See ad page 223.

JUSTRITE MANUFACTURING CO.
2061 N. Southport Ave., Chicago 14, Ill.
**See ad pages 242 and 248.

Branch Offices:

New York 7, N. Y.—120 Liberty St.

KAAN ENGINEERING CORPORATION
2995 Middlefield Rd., P. O. Box 1320, Palo Alto, Calif.

Representatives:

Baltimore 4, Md.—Leff & Eader Corp., 1844 Edgewood Rd.
Chicago 45, Ill.—William J. Doyle, 2600 W. Touhy Ave.
Cleveland 24, Ohio—Sid Levin, 6252 Mayfield Rd.
Colorado Springs, Colo.—Peyser & Co., 1501 N. Weber St.
Grand Rapids, Mich.—J. Malcolm Flora, Inc., 1648 34th St.
Honolulu, Hawaii—Hastin Sales Corp., 235 Cooke St.
Kansas City 11, Mo.—Arthur K. Elliott Co., 211 Westport Rd.
Levittown, N. J.—Leff & Eader Corp., 11 Peppermint Lane
Lynbrook, L. I., N. Y.—R. S. Puleo, 5 Whittier St.
Monterey Park, Calif.—King-Moon Co., Inc., 128 N. Garfield Ave., P. O. Box 178
New Orleans 25, La.—Nelson E. Thomas & Assoc., 7825 Forshey St.
North Bend, Ore.—Leslie L. Sprogis, 2347 Broadway
Plymouth, Mich.—J. Malcolm Flora, Inc., North Territorial at Ridgewood
Portland 19, Ore.—Donal Co., 3139 S. W. Altadena Ter., P. O. Box 7013
Reno, Nev.—Gordon Armstrong, 629 W. 11th St.
San Francisco 3, Calif.—Logan & Logan Co., 254-12th St.
Seattle, Wash.—Gordon Armstrong, 226-29th Ave., N.
Winston-Salem, Ore.—Hilker Co., P. O. Box 5211

Toronto 9, Ont., Canada—Tele-Radio Systems, Ltd., 3633 Dundas St., W.
Vancouver, B. C., Canada—Armstrong-Pacific, Ltd., 801 Dominion Bldg.

KAHL SCIENTIFIC INSTRUMENT CORP.
P. O. Box 1166, El Cajon, Calif.

Branch Offices:

New York 3, N. Y.—12 East 12th St.

KAREL FIRST AID SUPPLY COMPANY
4342 Ogden Ave., Chicago 23, Illinois

KEDMAN COMPANY
233 S. 5th West St., Salt Lake City 1, Utah

KELITE CORP.
813 Industrial Rd., Berkeley Heights, N. J.

Branch Offices:

Chicago 45, Ill.—3401 W. Touhy Ave.
Los Angeles 12, Calif.—1250 N. Main St.

KELLEY COMPANY
2129 W. Mill Rd., Milwaukee 1, Wis.

KELLY PAINT CO.
1445 S. 15th St., Louisville 10, Ky.

KENNEDY-INGALLS INC.
3795 N. 35th St., Milwaukee 16, Wis.
**See ad page 142.

KENNCO
3731 N. 50th St., Box 4178, Lincoln 7, Nebr.

KEWAUNEE MFG. CO.
5162 S. Center St., Adrian, Mich.
**See ad page 91.

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

KEYSTONE VIEW COMPANY
Meadville, Pa.

Branch Offices:

New York, N. Y. –5037 Broadway

Distributors:

Burbank, Calif. –B. J. Lorenz, 1719 Parkside Ave.
Denver, Colo. –Cromars', 28 E. 9th Ave.
Detroit, Mich. –C. J. McLaughlin, 3778 Carter
Erie, Pa. –Carl O. Backstrom, 529 W. 18th St.
Faribault, Minn. –R. E. Carlson, 621 1st St. N. W.
Fort Worth, Tex. –E. H. Bailey, 3204 Burson
Greensboro, N. C. –C. T. McNany, A-3 Country Club Apts.
Lancaster, Pa. –O. H. Lowry, 18 N. Bausman
Memphis, Tenn. –T. R. Patterson, 990 E. Rainbow Drive
St. Joseph, Mo. –Robert Hinekley, 2814 Jackson
Tulsa, Okla. –Frank Braunlick, 936 S. Canton

Toronto, Ont., Canada–Imperial Optical Co., Hermant Bldg.

KIDDE, WALTER & COMPANY, INC.
Kidde Ultrasonic & Detection Alarms Division
3450 Brighton Rd., Clifton, N. J.

KIDDE, WALTER, & CO., INC.
3450 Main St., Belleville 9, N. J.
**See ad page 247.

Branch Offices:

Atlanta 25, Ga. –1882 Marietta Blvd., N. W.
Chicago 7, Ill. –1310-20 W. Randolph St.
Dallas 35, Tex. –7224 Harry Hines Blvd.
Detroit 37, Mich. –20850 Coolidge Hwy.
Los Angeles 16, Calif. –4845 W. Exposition Blvd.
Newton Lower Falls 62, Mass. –2284 Washington St.
Philadelphia 4, Pa. –101 N. 33rd St.

Distributors:

Located in principal cities.

KIMBALL SAFETY PROD. CO.
9310 Wade Park Ave., Cleveland 6, Ohio

Distributors:

Buffalo, N. Y. –Industrial Safety Prod. Co., Box 32, South Park Sta.
St. Charles, Mo. –Midwestern Safety Equip. Co., Box 358

KIMBERLY-CLARK CORPORATION
North Lake Street, Neenah, Wisconsin

Branch Offices:

Atlanta 5, Ga. –3272 Peachtree Road, N. E.
Chicago 54, Ill. –The Merchandise Mart
New York 17, N. Y. –250 Park Ave.
Palo Alto, Calif. –701 Welch Road

KIN TELL
Division of Cohu Electronics, Inc.
5725 Kearny Villa Road, San Diego 11, Calif.

Representatives:

Albuquerque, N. M. –Neely Enterprises, P. O. Box 8366, Station C
Atlanta 5, Ga. –Bivins & Caldwell, Inc., 3110 Maple Dr., N. E.
Baltimore 15, Md. –Norman Associates, Inc., 3006 W. Cold Spring Lane
Bridgeport, Conn. –Technical Instruments, Inc., 281 Fairfield Ave.
Chicago 45, Ill. –Crossley Associates, 2501 W. Peterson Ave.
Cleveland 24, Ohio–S. Sterling Co., 5827 Mayfield Rd.
Dallas 19, Tex. –Arnold Barnes Co., 3603 Lemmon Ave.
Dayton 19, Ohio–Crossley Associates, Inc., 2801 Far Hills Ave.
Denver 22, Colo. –Williams & Associates, Inc., 2261 S. Albion St.
Detroit 35, Mich. –S. Sterling Co., 15310 W. McNichols Road
Englewood, N. J. –RMC Associates, 391 Grand Ave.
High Point, N. C. –Bivins & Caldwell, Inc., P. O. Box 5187
Indianapolis, Ind. –Crossley Associates, Inc., 5420 N. College Ave.
Kansas City 32, Mo. –Harris-Hanson Co., 7916 Paseo Ave.
Las Cruces, N. M. –Neely Enterprises, 126 S. Water St.
New York 21, N. Y. –RMC Associates, 236 E. 75th St.
North Hollywood, Calif. –Neely Enterprises, 3939 Lankershim Blvd.
Orlando, Fla. –Bivins & Caldwell, Inc., P. O. Box 7942
Phoenix, Ariz. –Neely Enterprises, 641 E. Missouri
Pittsburgh 36, Pa. –H. E. Ransford Co., 5400 Clairton Blvd.
Reading, Mass. –Technical Instruments, Inc., 90 Main St.
Richmond 30, Va. –Bivins & Caldwell, Inc., P. O. Box 6514
Rockville, Md. –Norman Associates, Inc., 961 Rollins Ave.
Sacramento, Calif. –Neely Enterprises, 1317 Fifteenth St.
St. Louis 17, Mo. –Harris-Hanson Co., 2814 S. Brentwood Blvd.
St. Paul, Minn. –Crossley Associates, Inc., 842 Raymond Ave.
Salt Lake City, Utah–Williams & Associates, Inc., 320 E. 4th South
San Carlos, Calif. –Neely Enterprises, 501 Laurel St.
San Diego 6, Calif. –Neely Enterprises, 1055 Shafter St.
Seattle 9, Wash. –ARVA, 1320 Prospect St.
Syracuse, N. Y. –J. D. Ryerson Associates, Inc., P. O. Box 1400
Tucson, Ariz. –Neely Enterprises, 232 S. Tucson Blvd.
Wayne, Pa. –Fred F. Bartlett & Co., 18 West Ave.

KINNEAR MFG. CO., THE
Fields Ave., Columbus 16, Ohio

Branch Offices:

Arlington 1, Va. –2030 N. 16th St., 504 Radio Bldg.
Baltimore 1, Md. –10 W. 23rd St.
Boston 18, Mass. –110 Worcester St.
Chicago 6, Ill. –150 North Wacker Drive
Cincinnati 1, Ohio–527 E. Fifth St.
Cleveland 10, Ohio–1217 Hayden Ave.
Columbus 16, Ohio–820-870 Fields Ave.
Detroit 3, Mich. –12330 Hamilton Ave.
New Orleans 12, La. –629 Hibernia Bank Bldg.
New York 17, N. Y. –511 Fifth Ave.
Philadelphia 22, Pa. –1934 North Front St.
Pittsburgh 22, Pa. –2301 First National Bank Bldg.
San Francisco 24, Calif. –1742 Yosemite Ave.

KIP, INC.
778 E. Pico Blvd., Los Angeles 21, Calif.

Branch Offices:

Tokyo, Japan
Bankok, Thailand

KLEIN, MATHIAS & SONS, INC.
7200 McCormick Rd., Chicago 45, Ill.

Distributors:

Located in Principal Cities

KNAPP BROS. SHOE MFG. CORP.
173 Spark St., Brockton 61, Mass.
**See ad page 156.

KOSCH MFG. CO.
P. O. Box 588, Columbus, Neb.

Distributors:

Billings, Mont. –Seltz Distributing Co., 503 N. 25th St.
Caldwell, Idaho–Mitchell, Lewis & Staver, Blonquist Ave.
Columbus, Ohio–McCune & Co., Inc., 1066 Kinnear Rd.
Dallas, Tex. –General Corp., 1925 Levee St.
Denver, Colo. –George Brothers, 973 Broadway
Dundee, Ill. –Lakes Supply Co.
Ephrata, Pa. –Hamilton Equip., Inc., P. O. Box 178
Flint 6, Mich. –Michigan Equip. & Parts Co., P. O. Box 6034
Fresno, Calif. –H. C. Shaw Co., Inc., 240 N. Thorne Ave.
Hasbrouck Heights, N. J. –R. E. Brooks Co., Rt. No. 17
Hayward, Calif. –Industrial Lift, Inc., 1035 Bartlett Ave.
Kansas City 3, Kansas–Rivard Sales Co., Inc., 2540 W. 47th St.
Lansing, Mich. –Capital Equip. Co., N. Grand River & DeWitt Rd.
Lexington, Ky. –Kentucky-Tennessee Distributors, Inc., 960 Pine St.
Macon, Ga. –R. C. Cropper Co., 7th & Mulberry
Marion, Ind. –Capital Equip. Co., 3302 S. Landress St.
Memphis, Tenn. –King Sales Co., 445 Tennessee St.
Minneapolis, Minn. –Midwest Co., Inc., 113 N. First St.
Norfolk, Va. –Todd Co., Inc., 416 Union St.
Omaha, Neb. –John Day Rubber & Supply Co., 10th & Harney
Phoenix, Ariz. –H. C. Shaw Co., Inc., 400 E. Pima
Portland, Ore. –Mitchell, Lewis & Staver, 801 S. E. Alder St.
Portsmouth, N. H. –Moulton & Goodwin, Inc., 126 Bridge St.
Salt Lake City, Utah–General Implement Distributors, 415 W. 2nd S.
Santa Ana, Calif. –H. C. Shaw Co., Inc., 1302 E. Delhi Rd.
Spokane, Wash. –Mitchell, Lewis & Staver, 2502 E. Trent Ave.
Stockton, Calif. –H. C. Shaw Co., Inc., 240 S. Aurora St.
Syracuse, N. Y. –Eastern Machinery, Inc., Box 162, Eastwood Sta.
Toledo, Ohio–Buhl Equip. Co., 534 Lasskey Rd.
Wichita, Kan. –Price Bros. Equip. Co., Washington & Orme
Youngstown, Ohio–McCune & Co., Inc., 3721 Mahoning Ave.

LA BELLE INDUSTRIES, INC.
Oconomowoc, Wisconsin

LA GRANGE MACHINE CO.
P. O. Box Pleasant Valley, Pleasant Valley, N. Y.
**See ad page 220.

LANCASTER CHEMICAL CORP.
Broad & 13th Sts., Carlstadt, N. J.

LANDSVERK ELECTROMETER COMPANY
641 Sonora Ave., Glendale 1, Calif.
**See ad page 261.

LAWTER CHEMICALS, INC.
3550 Touhy Ave., Chicago 45, Ill.

Branch Offices:

Cleveland, Ohio–14237 Detroit Ave.
San Leandro, Calif. –595 W. Ave., 135th
S. Kearny, N. J. –24 Jacobus St.

Distributors:

Sausalito, Calif. –E. D. Bullard Co., 2680 Bridgeway
Toronto, Ont., Canada–Safety Supply Co., 214 King St.

LEEDS & NORTHRUP CO.
4970 Stenton Ave., Philadelphia 44, Pa.

Sales and Service Offices:

Albany, N. Y.
Atlanta 5, Ga. –3084 Grandview Ave. N. E.
Baton Rouge, La.
Boston 66, Mass. –430 Lexington St., Auburndale
Buffalo 15, N. Y. –3685 Harlem Rd.
Cincinnati 36, Ohio–8005 Plainfield Rd.
Clayton, Mo. –8000 Bonhomme Ave.
Cleveland 6, Ohio–1922 E. 107th St.
Columbus 12, Ohio–1465 Northwest Blvd.
Dallas 35, Tex. –100 Exchange Park N.
Davenport, Iowa
Denver 10, Colo. –2442 S. Downing St.
Des Moines, Iowa
Detroit 35, Mich. –18240 James Couzens Highway
East Orange, N. J. –99 Washington St.
Fort Washington, Pa.
Grand Rapids, Mich.
Hartford 17, (West) Conn. –2535 Albany Ave.
Houston 27, Tex. –3939 Essex Lane
Indianapolis 20, Ind. –1050 Broad Ripple Ave.
Kansas City 14, Mo. –7935A1 State Line Rd.
Milwaukee 2, Wis. –828 N. Broadway
Minneapolis, Minn.
Monterey Park, Calif. –1190 Monterey Pass Rd.
Munster, Ind. –8231-A Calumet Ave.
New York 17, N. Y. –711 Third Ave.
Park Ridge, Ill. –101 S. Washington St.
Phoenix, Ariz.
Pittsburgh 34, Pa. –300 Mt. Lebanon Blvd.
Portland, Ore.
Richmond, Va.
Salt Lake City 11, Utah–455 East 4th, South
San Diego, Calif.
San Francisco 3, Calif. –1095 Market St.
Seattle 9, Wash. –1311 Republican St.
Syracuse, N. Y.
Towson 4, Md. –311 E. Penna. Ave.
Tulsa 3, Okla. –8 E. 4th Street
Washington, D. C.
Winston-Salem, N. C.

LEGGE, WALTER G., COMPANY, INC.
101 Park Ave., New York 17, N. Y.
**See ad page 58.

Branch Offices:

Boonville, Mo. –735 6th St.
Brookline, Mass. –30 Harvard Court
Chicago, Ill. –360 N. Michigan Ave.
Cleveland, Ohio–1900 Euclid Bldg.
Dallas, Texas–2615 Elm St.
Denver, Colo. –2056 Humbolt St.
Detroit, Mich. –18840 W. McNichols
Fredericksburg, Va. –1009 Leeland Rd.
Glendale, Ariz. –4702 N. 58th St.
Grand Rapids 5, Mich. –1463 Burke Ave., N. E.
Hartford, Conn. –119 Ann St.
Houston 17, Tex. –8335 Findlay
Los Angeles, Calif. –4802 Loma Vista Ave.
Miami 47, Fla. –3636 N. W. 60th St.
Milwaukee, Wis. –4105 N. 24th Place
Murfreesboro, Tenn. –1204 Grantland
Oakland, Calif. –3871 Piedmont Ave.
Philadelphia, Pa. –714 Land Title Bldg.
Pittsburgh, Pa. –1123 Park Bldg.
Portland 9, Ore. –1238 N. W. Glisan St.
St. Charles, Mo. –209 Jefferson St.
Salem, Ore. –347 Court St.
Seattle, Wash. –984 Denny Way
Syracuse 5, N. Y. –222 Searlwyn Rd.

LEHIGH SAFETY SHOE CO.
First & Diner Sts., Emmaus, Pa.
**See ad pages 140 and 141.

Sales Representatives:

Allentown, Pa. –Frank S. Kistler, 1248 Hamilton St.
Bellevue, Wash. –C. J. Caldwell, 2810 109th S. E.
Bridgeville, Pa. –James Spooner, 82 Country Club Dr.
Broomall, Pa. –Paul E. Master, 701 Winchester Rd.
Calumet City, Ill. –John E. Ellis, P. O. Box 157
Cleveland 16, Ohio–R. A. Warner, 21264 Kenwood Ave.
Columbia, S. C. –Eugene H. Page, 3221 Kline St.
Dallas 20, Tex. –Paul Campbell, 4346 Park Lane
Detroit 27, Mich. –W. C. Snell, 14234 Woodmont Rd.
Fayetteville, N. Y. –B. O. Longnecker, 108 Cleveland Blvd.
Grand Rapids 5, Mich. –Al Roy, 1042 Arlington St., N. E.
Indianapolis, Ind. –Hugh J. Trimble, 3931 N. College Ave.
Long Island, N. Y. –Andrew F. Rueb, 38 Nichols Rd., Huntington Sta.
Marietta, Ohio–Raymond Codrea, 103 Milton Rd., Devola
Milwaukee, Wis. –Roy McLean, 232 E. Center St.
Nashville, Tenn. –Miller Hunter, 2807 Blair Blvd.
New Castle, Dela. –Fred A. Hoppes, 211 Sterling Ave., Llangollen Estate
New Orleans 25, La. –E. B. Brown, 2807 Audubon St.
Newton Center, Mass. –Lawrence F. Connolly, 10 Cotswold Terrace
Phoenix, Ariz. –Clem Merskoetter, 4138 N. 19th Ave.
Reseda, Calif. –Stanley Dean, 7136 Geyser Ave.
Rochelle Park, N. J. –Vincent J. Kiely, 71 South Dr.
Schnecksville, Pa. –Arnold F. Warner, R. D. #1
Struthers, Ohio–N. Moore, 162 Poland Ave.
Tonawanda, N. Y. –J. W. Goodwin, 188 Greenhaven Terrace
Wichita 4, Kan. –C. R. Ward, 2717 W. 25th N.

LESCHEN WIRE ROPE DIVISION
H. K. Porter Company, Inc.
2727 Hamilton Ave., St. Louis 12, Mo.

Branch Offices:

Atlanta, Ga. –1238 Fernwood Circle, N. E.
Chicago, Ill. –2300 W. Division St.
Houston, Tex. –34 Jenkins St.
Los Angeles, Calif. –6400 Corvette St.
Newark, N. J. –219 Emmet St.
New Kensington, Pa. –450 Second St.
Oklahoma City, Okla. –216 S. Klein St.
San Francisco, Calif. –1485 Bayshore Blvd.
Seattle, Wash. –1041 Alaskan Way South

LIBERTY PROTECTIVE LEATHERS, INC.
17-29 Burr St., Gloversville, N. Y.
**See ad page 185.

LIGHTFOOT COMPANY, INC., THE
380 Madison Ave., New York 17, N. Y.

Branch Offices:

Chicago 11, Ill. –251 E. Grand Ave.

Distributors:

Bridgeport, Conn. –Geo. Schopick, 22 Cross St.
Chicago, Ill. –W. E. Pemberton, 161 E. Grand Ave.
Detroit 4, Mich. –Paul Turgeon, 11700 Nardin Ave.
Dover, N. J. –C. C. Anderson, 9 Taylor St.
Milwaukee, Wis. –O. O. Baddeley, 5019 W. Galena St.
Pittsburgh 17, Pa. –S. P. Dolan, 6605 Ridgeville St.
St. Louis 33, Mo. –Phillip Hall, 6117 Page Blvd.

LINDE COMPANY
Div. of Union Carbide Corp.
270 Park Ave., New York 17, N. Y.

Branch Offices:

Atlanta 8, Ga. –22 Seventh St., N. E.
Baltimore 4, Md. –200 E. Joppa Rd.
Birmingham 9, Ala. –2900 Cahaba Rd.

Continued on next page

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Boston 94, Mass.—300 First Ave., Needham Hgts.
Buffalo 2, N.Y.—250 Delaware Ave.
Charleston 4, W. Va.—3510 MacCorkle Ave., S.E.
Chicago 1, Ill.—230 N. Michigan Ave.
Cincinnati 6, Ohio—1501 Madison Rd. at Victory Pkwy.
Cleveland 14, Ohio—1300 Lakeside Ave.
Dallas, Tex.—4300 N. Central Expressway
Denver 23, Colo.—660 S. Santa Fe Dr.
Detroit 21, Mich.—10421 W. Seven Mile Rd.
Houston 27, Tex.—3839 W. Alabama
Kansas City 5, Mo.—910 Baltimore Ave.
Los Angeles 58, Calif.—2770 Leonis Blvd.
Milwaukee 6, Wis.—2510 West Capitol Drive
Minneapolis 16, Minn.—3033 Excelsior Blvd.
New Orleans 19, La.—4833 Conti St.
Pittsburgh 22, Pa.—644, The Oliver Bldg. Mellon Sq.
Route 38, Moorestown—Pleasant Valley Rd.
St. Louis 5, (Clayton) Mo.—111 S. Meramec Ave.
Salt Lake City 11, Utah—999 S. Redwood Rd.
San Francisco 6, Calif.—22 Battery St.
Seattle 4, Wash.—3404 Fourth Ave. S.
Tulsa 24, Okla.—2901 S. Harvard Ave.
Union, N. J.—2065 Rt. 22
Washington 5, D.C.—Wyatt Bldg., 777 14th St., N.W.

LINK-BELT CO.
Dept. NSN-61, Prudential Plaza, Chicago 1, Ill.

District Sales Offices and Warehouses:

Atlanta 10, Ga.—1116 Murphy Ave., S.W., P.O. Box 10514, Sta. A
Baltimore 12, Md.—7212 York Rd.
Birmingham 9, Ala.—1812 28th St., S.
Boston 15, Mass.—136 Brookline Ave.
Buffalo 23, N.Y.—956 Kenmore Ave.
Charlotte 2, N.C.—112 S. Tryon St.
Chicago 9, Ill.—301 W. Pershing Rd.
Cincinnati 2, Ohio—138 E. Court St.
Cleveland 20, Ohio—3592 Lee Rd.
Dallas 26, Tex.—500 Good-Latimer Expressway
Denver 2, Colo.—Schloss & Shubart, 1626 Wazee St.
Detroit 4, Mich.—5938 Linsdale Ave.
Duluth 2, Minn.—301 W. First St.
Grand Rapids 7, Mich.—1330 Burton St., S.E.
Houston 1, Tex.—3203 S. Wayside, Box 2563
Huntington 1, W. Va.—1009 Fifth Ave., Box 510
Indianapolis 6, Ind.—220 S. Belmont Ave.
Jacksonville 2, Fla.—137 E. Forsyth St.
Kansas City 8, Mo.—2630 Holmes St.
Los Angeles 22, Calif.—P.O. Box 22056
Louisville 8, Ky.—235 E. Burnett St.
Milwaukee 3, Wis.—808 N. Third St.
Minneapolis 5, Minn.—200 Lyndale Ave., N.
Moline, Ill.—1614½ Fifth Ave.
New Orleans 16, La.—2025 Canal St.
New York 36, N.Y.—530 Fifth Ave.
Philadelphia 40, Pa.—2045 W. Hunting Park Ave.
Pittsburgh 13, Pa.—5020 Centre Ave.
Portland 10, Ore.—3030 N.W. Industrial St.
Salt Lake City 1, Utah—108 S. Fourth West St.
San Francisco 24, Calif.—400 Paul Ave.
Seattle 4, Wash.—3405 Sixth Ave., S.
Shreveport, La.—3109 Alexander St.
Spokane 10, Wash.—1303 Washington St.
St. Louis 1, Mo.—317 N. 11th St.
Summit, N.J.—293 Morris Ave.
Washington 1, D.C.—740 Eleventh St., N.W.
Wilmington 1, Del.—805 Orange St.

LITTELL, F.J., MACHINE COMPANY
Vac-U-Nation Division
4127 Ravenswood Ave., Chicago 13, Illinois
**See ad page 222.

Branch Offices:

Detroit, Mich.—2842 W. Grand Blvd., Rm. 414
Cleveland, Ohio—20800 Center Ridge Rd., Rm. 207

Distributors:

Birmingham, Ala.—Tool Engineering Serv., 921 N. 21st St.
Charleston, W. Va.—Jefferds & Moore, Inc., 3416 Chesterfield Ave.
Charlotte, N. C.—Geo. A. Marshall Machy., P.O. 9088
Dayton 9, Ohio—Selfreat-Elstad Mach., P.O. Box 586, Far Hill Brch.
Denver, Colo.—Mine & Smelter Supply Co., 3800 Race St.
Englewood, N.J.—Meredith Machinery Co., P.O. Box 749
Fort Worth, Texas—Southwest Air Equip. Co. P.O. Box 954
Grand Rapids 7, Mich.—Wing & Jabaay, 2685 S. Division Ave.
Hartford, Conn.—Melville L. Merrill, 124 LaSalle Rd., West Hartington Park, Calif.—Montague-Harris & Co., 5301 Pacific Blvd.
Knoxville, Tenn.—Tidewater Supply Co., 1306 Island Home Ave.
Louisville 2, Ky.—Orr Safety Equip. Co., 300 E. Main St.
Needham 92, Mass. Philpps Machinery Co., 1237 Highland Ave.
New Orleans, La.—Allied Equip. Sales, 3622 Leonidas St.
Philadelphia, Pa.—D. Nast Machy. Co., 2508 N. Broad St.
Pittsburgh 26, Pa.—Leonard R. Nourie, Inc., 2414 W. Liberty Ave.
St. Paul 14, Minn.—W. H. Schulz Co., 2438 Franklin Ave.
San Francisco, Calif.—Montague-Harris & Co., 893 Folsom St.
Upper Darby, Pa.—Louis C. Hahn, 53 Long Lane
Wichita, Kan.—Baker Engrg. & Equip. Co., 305 Pattie Ave.

LITTLE GIANT WINDOW BRACKET CO.
210 N. First St., Knoxville, Iowa

LOFSTRAND COMPANY, THE
Southlawn Lane, Rockville, Md.

LOGAN EMERGENCY SHOWERS, INC.
P.O. Box 111, Glendale, Calif.

Branch Offices:

Baltimore 28, Md.—106 Oak Drive
Sausalito, Calif.—3030 Bridgeway Blvd.

LOUDEN MACHINERY COMPANY, THE
809 Broadway, Fairfield, Iowa

Branch Offices:

Akron 9, Ohio—223 E. Center St.
Chicago 39, Illinois—5908 W. North Ave.
Cincinnati 8, Ohio—2007 Madison Rd.
Clark, N.J.—222 Terminal Ave.
Detroit 2, Mich.—7338 Woodward Ave.
Kansas City 11, Mo.—406 W. 34th St.
Milwaukee 3, Wis.—743 N. Fourth St.
Newton 58, Mass.—272 Centre St.
Pittsburgh 34, Pa.—300 Mt. Lebanon Blvd.
Philadelphia 2, Pa.—1505 Race St.

Distributors:

Atlanta 5, Ga.—I. M. C. Equip., Inc., 3133 Maple Drive, N.E.
Avon, Conn.—Steven J. Mulak, P.O. Box 217
Birmingham 5, Ala.—Ebert & Kirkman Co., Inc., 720 S. 23rd St.
Buffalo 2, N.Y.—J. A. Webb Belting Co., Inc., 92 Pearl St.
Charlotte 1, N.C.—Industrial & Textile Supply Co., 1300 S. Mint St.
Chattanooga 5, Tenn.—H. M. Sawrie, 616 Lindsay St.
Columbus 2, Ohio—W. A. Jackson, Jr., P.O. Box 4816, Sta. B
Dallas 35, Tex.—W. Y. Garrett, 6903 Forest Park Rd.
Denver 2, Colo.—Plant Equip. Co., 1400 Market St.
Grand Rapids 4, Mich.—Jarvis Handling Equip. Co., 1320 Front Ave. N.W.
Greenville, S.C.—Berry Equip. Co., 29 Pendleton St.
Houston, Tex.—R. J. MacFarland, 1607 Jefferson
Huntington 1, W. Va.—Marshall Equip. Co., Inc., 1605 16th St.
Indianapolis 8, Ind.—Gruen Equip. Co., 3400 N. Meridian St.
Jacksonville 11, Fla.—Ferguson Barnes, 1306 Oak Haven Dr.
Johnson City, Tenn.—O. M. Jones, 1015A E. Unaka Ave.
Latham, N.Y.—Shako, Inc., P.O. Box 966
Louisville 8, Ky.—Miller Engineering Corp., 119 E. Barbee Ave.
Memphis 11, Tenn.—Malcolm S. Cone, Jr., 3823 Northwood Dr.
Minneapolis 14, Minn.—The Zeco Co., 2929 University Ave. S.E.
Montebello, Calif.—The Ajay Co., 3301 W. Beverly Blvd.
New Orleans 18, La.—Lloyd L. Barlow, 8201 Palm St.
Oklahoma City 2, Okla.—Power Equip., Inc., 1739 W. Main
St. Louis 8, Mo.—Wharton L. Peters Machinery Co., 3863 W. Pine Blvd.
San Francisco 7, Calif.—Acme Equip. Co., 801 Minnesota St.
Seattle 8, Wash.—Charles Industrial Sales Co., 7510 Fifth Ave. S.
South Bend 15, Ind.—Sippel Equip. Co., Inc., 1206 Mishawaka Ave.
Toledo 12, Ohio—Huss Equip. Co., 138-142 Sylvania Ave.
Washington 14, D.C.—Cooper & Minich, Inc., 8030 Woodmont Ave. N.W.

LUMMIS MFG. CO.
2242 E. Foothill Blvd., Pasadena, Calif.

Distributors:

Wausau, Wis.—CTL Company, Inc., 1710 W. Stewart Ave.

LUXO LAMP CORP.
Dock St., Port Chester, N.Y.

Branch Offices:

Buffalo 22, N.Y.—George S. Gilbert, P.O. Box 104
Chicago, Ill.—A. H. Bruning Co., 4120 W. Peterson Ave.
Chicago, Ill.—Tideman-Sprenger, 600 W. Jackson St.
Cleveland 22, Ohio—Adolph Radin, 2745 Solgrave Rd.
Cleveland 18, Ohio—Fred A. Rosenwasser, 13781 Cedar Rd.
Dallas 19, Tex.—Berthold Sales, 4411 Maple Ave.
Dallas 24, Tex.—Cadwallader-Cochran, Inc., Box 13723
Detroit 27, Mich.—Horton Electric Sales, 13545 Memorial Ave.
Greenwood, Miss.—Leroy Massey, Box 724, 304 E. Jefferson St.
Kansas City 10, Mo.—Clemenson-Larrabee, 436 E. 79th
Miami, Fla.—William Hemminger, 624 N. E. 79th St.
Mound, Minn.—Forest Carleen, Route 1
Racine, Wis.—O. Hale Darnold, P.O. Box 987
San Francisco 24, Calif.—Luxo Lamp Corp., 1683 Jerrold Ave.
Schwensville, Pa.—Chester Piotrowski, Chetwin Farms
White Plains, N.Y.—Robert Rubin, 35 Barker Ave.

LYNRUS FINISHING CO., INC.
South Water at Union St., Poughkeepsie, N.Y.

Distributors:

Chicago 47, Ill.—Sager Glove Corp., 1672 N. Claremont Ave.
Chicago, Ill.—Wheeler Protective Apparel Inc., 224 W. Huron St.
Cleveland, Ohio—Safety Clothing Co., 1990 E. 69th
Long Island City, N.Y.—A. R. Nelson 38-35 Crescent St.
Newark, N.J.—Para Manufacturing Co., Inc., 500 Central Ave.
New Haven, Conn.—Herbert H. Setlow &Son, Orange
Quakertown, Pa.—Quaker Safety Products, Main & Jupiter

Montreal, Que., Canada—Beacon Uniform Inc., 9222 S. Lawrence Blvd.

M-B CORPORATION
1615 Wisconsin Ave., New Holstein, Wis.

Distributors:

Albuquerque, N.M.—Lively Equipment Co., 2601 Fourth St., N.W.
Atlanta, Ga.—Georgia Machinery & Supply, 585 Marietta St., N.W.
Barre, Vt.—Reynolds & Son, Inc., 84 N. Main St.
Berlin, Conn.—Deephouse Equip. Co., 1163 Farmington Ave.
Billings, Mont.—Industrial Equip. Co., 415 N. 27th St.
Birmingham, Ala.—Joe Money Machinery Co., 903 Third Ave., West
Boise 1, Idaho—Starline Equip. Co., 503 S. 16th St.
Buffalo, N.Y.—Cameron Equip. Co., 1875 Harlem Rd.
Cedar Rapids, Iowa—Martin Roasa Trac. & Equip., 2710 Sixth St., S.W.
Cheyenne, Wyo.—Wilson Equip. & Supply, 730 S. Greeley Highway
Chicago, Ill.—Schuster Equip. Co., 3130 S. Archer at Ashland
Chickasaw, Ala.—May Machinery Co., P.O. Box 395 Telegraph Rd.
Columbia, S.C.—Carolina Equip. & Parts, 500 Huger St.
Coram, L.I., N.Y.—Municipal Machinery Co., Route 25
Corry, Pa.—Corry Bridge & Supply
Denver, Colo.—Macdonald Equipment Co., 5300 Colorado
Detroit, Mich.—Michigan Road Improvement, 27303 W. Eight Mile Rd.
Devon, Pa.—Road Machinery Co., U.S. Hwy. 30
Duluth, Minn.—Road Machinery & Supplies, 212 E. First St.
Dunbar, W. Va.—Mountain State Equip. Co., 3960 Dunbar Ave.
East Providence, R.I.—J. J. Gregory & Sons, Route #6
Enid, Okla.—Bert Smith Road Machinery, 321 W. Chestnut St.
Fargo, N.D.—Service Tod & Supply, 1430 Main Ave.
Great Falls, Mont.—Normont Equip. Co., Box 951
Green Bay, Wis.—Paynter Equip. Co., 1734 Cass St.
Guilford College, N.C.—Packer Sales Corp., P.O. Box 8103
Hanover, N.J.—Dale & Rankin, State Highway 10
Houghton, Mich.—Paynter Equip. Co., Hwy. 41
Independence, Mo.—Burnup Equip. Co., 11303 Truman Rd.
Indianapolis, Ind.—Municipal Equip. Co., 2351 Kentucky Ave.
Joplin, Mo.—Service Equip. Co., 3205 E. 20th
Las Vegas, Nev.—Clark County Wholesale, 512 S. Main St.
Latham, N.Y.—Mott Manbeck Machinery Co., P.O. Box 997
Lincoln, Nebr.—Highway Equip. & Supply, 21st & N. Sts.
Little Rock, Ark.—Rushing & Mason Equip., 115 N. State St.
Los Angeles, Calif.—A. M. Donaher & Son, 7669 Compton Ave.
Louisville, Ky.—Elrod Equip. Co., 4517 Poplar Level Rd.
Macon Mo.—Strong Equip. Co., Highway 63 South
Manchester, N.H.—R. C. Hazelton Co., 1645 Candia Road
Metairie, La.—C. W. Spencer Co., Inc., 1020 Edenborn St.
Milwaukee, Wis.—Sedgwick-Hamm Equip. Co., 1815 S. 108th
Minneapolis, Minn.—Hayden-Murphy Equip. Co., 4501 Hiawatha Ave.
Nashville, Tenn.—Nixon Machinery Co., 1211 Demonbraun St.
Phoenix, Ariz.—Road Machinery Co., 716 S. Seventh St.
Pittsburgh, Pa.—Brinker Supply Co., 6545 Hamilton Ave.
Portland, Maine—Files & O'Keefe, Forest Ave. Extension
Portland, Ore.—Air Mac, Inc., 2727 S.E. Union Ave.
Richmond, Va.—Cary Hall Machinery Co., 1825 N. Hamilton St.
Rockford, Ill.—Eighmy Equip. Co., 120 S. Pierpont St.
St. Louis 3, Mo.—Darnell Equip. Co., 3545 Lindell Blvd.
Salt Lake City, Utah—Fowler Equipment, 1361 S. 2nd West
San Antonio 6, Tex.—Catto & Putty, 510 Soledad St.
San Francisco, Calif.—Edward R. Bacon Co., Folsom at 17th
Seattle, Wash.—Sahlberg Equip. Co., 5950 Fourth Ave., So.
Sioux City, Iowa—Pecaut Industrial Supply, 1819 E. 4th St.
Sioux Falls, S.D.—Pecaut Equip. Co., 900 E. 8th St.
Spokane, Wash.—Ferris Equip. Co., 3823 E. Trent Ave.
Springfield, Ill.—Drake Scruggs Equipment Co., 600 S. 31st St.
Stoughton, Mass.—E. W. Systrom Co., 951 Turnpike St.
Timonium, Md.—S. M. Christhilf & Son, Timonium Rd. & Harrisburg Express Way
Topeka, Kan.—Wentz Equip. Co., 600-08 N. Van Buren
West Palm Beach, Fla.—C & D Truck Service, Inc., 921 28th St.
Wilmington, Ohio—J & H Equip. Co., P.O. Box 688

M-M-A, INC.
53 N. Duke St., Lancaster, Pa.
**See ad page 216.

Distributors:

Atlanta, Ga.—Beck & Gregg, 217 Luckie St.
Avoca, N.Y.—Robin W. Adair Co.
Brooklyn, N.Y.—Fayne, Inc., 251 St. Marks Ave.
Buffalo, N.Y.—Steinwach Safety Supply, 1573 S. Park Ave.
Charlotte, N.C.—Douglas C. Goff, 935 Romany Rd.
Chicago, Ill.—James Ariaga, Hotel Guyon, 4000 W. Washington
Chicago, Ill.—McMaster-Carr Supply Co., 640 W. Lake St.
Chicago, Ill.—Trico Equipment Co., 4341 W. North Ave.
Cleveland, Ohio—R. C. Cook Co., 3944 W. 210th St.
Denver, Colo.—American Supply Co., 860 Vallejo St.
Hartford, Conn.—R. G. Kenneson Co., 397 Washington St.
Lakewood, Colo.—Kenion Tool & Machine Co., 2168 Field St.
Linden, N.J.—Guardian Safety Supply, 37 E. 21st St.
Los Angeles, Calif.—Richter Engineering Co., 2311 E. 8th St.
Louisville 1, Ky.—Southern Chemical Sales, Box #1274
Milwaukee, Wis.—Pagel Safety Supply Co., 4615 W. National Ave.
Minneapolis, Minn.—Elvin First Aid Supply, 327 Second Ave. N.
Orange, N.J.—IPCO Safety Products, 400 S. Jefferson
Orlando, Fla.—Air Devices, Inc., 716 W. Smith St.
Ottsville, Pa.—Skyproducts Inc.
Peoria, Ill.—Vonachen Industrial Supply, 3921 N. Sheridan Road
Philadelphia, Pa.—Guardian Safety Supply, 214 S. 45th St.
Pittsburgh, Pa.—Weld Tooling Corp., 3001 W. Carson St.
Rochester, N.Y.—O. B. Burdick, 743 Merchants Rd.
St. Louis, Mo.—Tri-State Equip. Co., 5850 Delmar Blvd.
St. Paul, Minn.—Wis-Min-Dak Co., 636 Grand Ave.
Troy, N.Y.—B-Lann Equip. Co., 2299 Fifth Ave.
Wilmington, Del.—Tri-State Laboratories, 106 E. Second St.
Worcester, Mass.—Fluid Specialties Co., 69 Fales St.

MACWHYTE WIRE ROPE COMPANY
2902 14th Ave., Kenosha, Wisconsin
**See ad page 199.

Branch Offices:

Atlanta 18, Ga.—1091 Herndon St., N.W.
Chicago 6, Ill.—228 S. Desplaines St.
Detroit 3, Mich.—15 Oakman Blvd.
Fort Worth 1, Tex.—T & P Terminal Whse.
Los Angeles 33, Calif.—185 S. Myers St.
Memphis Tenn.—254 N. Front St.
Newark 12, N.J.—324 Freilinghuysen Ave.
New Orleans 13, La.—144 Thalia St.
New York City 4, N.Y.—35 Water St.
Pittsburgh 36, Pa.—353 Curry Hollow Road
Portland 13, Ore.—1603 N.W. 14th Ave.
St. Paul 14, Minn.—2356 Hampden Ave.
San Francisco 7, Calif.—188 King St.
Seattle 4, Wash.—87 Holgate St.

MAGLINE, INC.
1952 Mercer St., Pinconning, Michigan

Distributors:

Atlanta, Ga.—Industrial Trucks Inc., 1113 Spring St., N.W.
Atlanta, Ga.—Southeastern Handling Equip. Co., Inc., 420 Luckie St. N.W.
Auburn, Maine—W. D. Mathews Machinery Co., 279 Center St.
Baltimore, Md.—Yarrington & Johns Inc., 324 W. 24th St.
Battle Creek, Mich.—The Fisher Co., 75 Guest St.
Charleston, W. Va.—Jefferds & Moore, Inc., 3416 Chesterfield Ave. S.E.
Charlotte, N.C.—F. H. Trethewey Co., 501 Dowd Rd., P.O. Box 1193
Chicago, Ill.—Manufacturers Aids Co., 2618 N. Laramie
Cincinnati 29, Ohio—John Marc Davis Supply Co., 4039 Rose Hills
Cleveland, Ohio—Robert M. Slife and Assoc., 2754 Woodhill Ave.
Columbus, Ohio—Ludlow Sales & Service, 1763-1775 S. High St.
Corpus Christi, Tex.—John Friedrichs, 609 Lester Ave.
Dallas, Tex.—Dillon Scale & Equip. Co., Inc., 3907 Elm St.
Dayton, Ohio—John P. Mulford, Far Hills, Box 603
Denver, Colo.—Applied Handling Co., 1863 Wazee St.
Des Moines, Iowa—Globe Machinery & Supply, E. 1st & Court Ave.
Detroit, Mich.—Glenn P. Crissman Co., 670 W. Baltimore Ave.

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Erie, Pa. –Erie Materials Handling Co., 2401 W. 12th
Flint, Mich. –Hall, Gransden, & Co., 920 Walnut St.
Fort Wayne, Ind. –J. O. Winter & Assoc., 2609 Broadway
Fresno 1, Calif. –Elliott Mfg. Co., 1735 Ventura Ave.
Grand Rapids 4, Mich. –Jarvis Handling Equip. Co., 1320 Front Ave., N. W.
Green Bay, Wis. –Lift Parts Service Co., 1672 Cass St.
Harrisburg, Pa. –Clark Materials Handling Co., 3908 Johnstown Rd.
Honolulu, Hawaii–Foster Equip. Co., 719 Ahua St., P. O. Box 2834
Houston 24, Tex. –Main Lines Co., P. O. Box 19461
Indianapolis, Ind. –Material Handling Equip. Co., Inc., 1224 N. Capital Ave.
Jacksonville, Fla. –R. B. Curlin & Sons, 913 W. Adams St.
Kansas City, Mo. –L. O. Hutcheson & Assoc., P. O. Box 9769
Kenmore, N. Y. –Charles Mast, 129 Mang Ave.
Kingston, Pa. –James L. Neale, P. O. Box 1131
Lansdowne, Pa. –J. Morris Cope, P. O. Box 247
Latham, N. Y. –Rushmore Weber & Case Inc., 950 New London Rd.
Little Rock, Ark. –Troy Burns Co., 3015 Lewis St.
Los Angeles, Calif. –W. T. Billard, Inc., 734 E. 3rd St.
Los Angeles, Calif. –Colson Equip. & Supply Co., 1317 Willow St.
Los Angeles, Calif. –Yale & Towne Mfg. Co., 5711 Olympic Blvd.
Louisville, Ky. –Wm. J. Laise Co., Shelby at Fehr, P. O. Box 1236
Medford 55, Mass. –A. D. Bowman, Assoc., 415 Mystic Ave., Box 28
Memphis, Tenn. –Jones, Grady, Co., 1082 Union Ave.
Metairie, La. –Industry Services, Inc., 3714 Airline Highway
Miami, Fla. –Stiles Conveyors & Transmission, 596 N. W. 54th St.
Milford, Conn. –Industrial Trucks, 66 Boston Post Rd.
Milwaukee 9, Wis. –Stoffel Equip. Co., 5300 N. Sherman Blvd.
Minneapolis, Minn. –W. S. Nott, Hyster Div., 2226 E. Lake
Mishawaka, Ind. –Material Handling & Packaging, 215 Lincoln Way W.
Mobile, Ala. –Elm Equip. Co., 256 N. Wash. Ave., P. O. Box 1191
Nashville, Tenn. –The Bailey Co., Inc., 1010 4th Ave., N.
New Haven, Conn. –A. C. Stone, 265 Church St.
New Rochelle, N. Y. –Eastern Industrial Sales Co., 136 Huguenot St.
New York, N. Y. –George E. Kenneth, 224 E. 38th St.
Omaha 31, Neb. –Riekes Equip. Co., 2910 Cuming, Box 1031
Orange, N. J. –Material Handling Assoc., Inc., 58 S. Day St.
Pawtucket, R. I. –J. A. Kraatz Corp., 503 Main St.
Peoria, Ill. –Allied Equip. Co., 432 First Nat. Bank Bldg.
Phoenix, Ariz. –Kistler Industrial Service, 902 S. Central
Pittsburgh 38, Pa. –Mahaffey Equip. Co., 1200 Freeman Rd.
Portland, Ore. –Air Mac, Inc., 1111 S. E. Grand Ave.
Reading, Pa. –H. E. Fortna & Bro, 313 N. 3rd St.
Renfrew, Ontario, Canada–Magline of Canada, Ltd.
Rochester 6, N. Y. –Insley-McEntee Equip. Co., 1112 Emerson
Rock Island, Ill. –Plant Equipment Co., 2911 Fifth Ave.
Saginaw, Mich. –P. J. Zehnder, 1619 Hanchett St.
St. Louis 19, Mo. –Massey Equip. Co., 1011 Woodbine Dr.
Salt Lake City, Utah–Western Machinery Co., P. O. Box 2548
San Diego, Calif. –Winn Supply Co., 1676 Main St., P. O. Box 1709
Seattle, Wash. –Air Mac, Inc., 3838 4th Ave., S.
S., Birmingham, Ala. –Southeastern Handling Equip. Co., Inc., 2303 7th Ave.
S. San Francisco, Calif. –Hamerslag Equip. Co., 110 Freeway Blvd.
Spokane, Wash. –Air Mac, Inc., E. 3710 Trent Ave., P. O. Box 1125
Syracuse, N. Y. –Raymond Corp., 647 S. Warren
Tacoma, Wash. –Air Mac, Inc., 1003 Washington Bldg.
Tampa, Fla. –R. B. Curlin & Sons, Inc., 1930 E. Hillsboro Ave., Produce Sta., P. O. Box 11428
Toledo, Ohio–Bohl Equip. Co., 534 Laskey Rd.
Tulsa, Okla. –Hart Industrial Supply Co., P. O. Box 2329
Tulsa, Okla. –Carl D. Stone Equip. Co., 1407 E. 6th St.
Union, S. C. –T. E. Mack Co., Inc., 113 W. Main St., P. O. Box 209
Utica, N. Y. –Northern Handling Supply Co., P. O. Box 633
Washington, D. C. –Paul H. Werres Co., Inc., 1832 M. St., N. W.
Wichita, Kans. –S. Riekes & Sons, 614 N. Main St.
Yakima, Wash. –Air Mac, Inc., 313 N. Grandview
Youngstown, Ohio–Valley Industrial Trucks Inc., 1152 Meadowbrook Ave.

MAGNAFLUX CORP.
7300 W. Lawrence, Chicago, Ill.
**See ad page 222.

MAGNUS CHEMICAL CO., INC.
68 South Ave., Garwood, N. J.

MAICO ELECTRONICS, INC.
21 N. Third St., Minneapolis 1, Minn.

MARRYATT-LANE AND CO., INC.
234 Godwin Ave., Paterson 1, N. J.
**See ad page 252.

MASTER LOCK COMPANY
2600 N. 32nd St., Milwaukee 45, Wisconsin

MASURY-YOUNG COMPANY
76 Roland St., Boston 29, Mass.

Branch Offices:

Arlington, Va. –2523 Wilson Blvd.
Atlanta, Ga. –965 Western Ave., N. W.
Chicago, Ill. –10 S. LaSalle St.
Denver, Colo. –1940 Blake St.
Detroit, Mich. –4765 Bellevue Ave.
Emeryville, Calif. –4001 Hollis St.
Houston, Tex. –1002-1008 Washington Ave.
Kansas City, Mo. –216 E. 10th St.
Los Angeles, Calif. –440 Seaton St.
New York, N. Y. –250 Park Ave., Postum Bldg., Room 511
Philadelphia, Pa. –81 Fairmont Ave.
Portland, Ore. –1233 N. W. 12th Ave.
St. Paul, Minn. –425 E. Eighth St.

McAN, THON, SAFETY SHOE DIVISION
25 West 43 St., New York 36, New York
**See ad pages 148 and 149.

Representatives:

Camillus, N. Y. –Albert Duncan, 211 Crestwood Drive
Charleston 46, S. C. –Jack Speer, 535 Parkwood Dr.
Cranford, N. J. –George Kiesewetter, 11 Cherokee Road.
Dearborn, Mich. –Martin Bitter, 6627 Evangeline
Dunbar, W. Va. –Al Taber, 460 19th St.
Emmaus, Pa. –John Yudt, 972 Buttonwood St.
Fairborn, Ohio–Pete Zambito, 2648 Big Woods Trail
Fort Worth, Tex. –George Weyl, 4021 Carolyn Rd.
Milwaukee, Wis. –Troy Corder, 200 N. 76th St.
Mission Hills, Calif. –Bob Bell, 14655 Kingsbury St.
Moody, Maine–Sidney Wakely, P. O. Box 133
North Merrick, N. Y. –Edward Serrapede, 1609 Wesley Ave.
Oak Lawn, Illinois–Marvin Mudd, 10115 S. 53 Ave.
Portland, Oregon–Harry Caldwell, 5926 S. E. Tibbets St.
St. Louis, Mo. –Herbert Kelley, 4858 Goeth St.
Tuscaloosa, Ala. –James Stewart, P. O. Box 659

MC GILL MANUFACTURING COMPANY, INCORPORATED
1002 North Campbell Street, Valparaiso, Indiana

Branch Offices:

Atlanta 8, Ga. –Ernest T. Loyd, Inc., 69 Mills St.
Buffalo 21, N. Y. –Albert C. Schultz Co., 76 So. Long St.
Chicago 32, Ill. –R. J. Eckert, 4827 S. Keating Ave.
Dallas 6, Texas–Jack Raley, 101 Prentice Bldg., 4515 Prentice St.
Detroit, Mich. –Turrell & Co., Inc., 8414 W. McNichols Rd.
Elyria, Ohio–Byron W. Gramps, 1935 Grafton Rd.
Long Island, N. Y. –Geo. C. Knott, Jr., P. O. Box #389, Port Wash.
Los Angeles 13, Calif. –J. G. Pomeroy Co., 1004 E. 4th St.
Milwaukee 13, Wis. –Richard Q. Windle, 127 N. 92nd St.
Minneapolis, Minn. –Harland G. Schendel, 3746 Cedar Ave., S.
San Francisco 10, Calif. –George A. Gray Co., 2720 17th St.
South Glastonbury, Conn. –Jack Kogel, 220 Stockade Rd.
Valparaiso, Ind. –Field Crosby, 1002 N. Campbell St.

McKAY COMPANY, THE
1005 Liberty Ave., Pittsburgh 22, Pa.
**See ad page 197.

Distributors:

Albuquerque, N. M. –531 Haines Ave., N. W.
Atlanta 18, Ga. –535 Means St.
Birmingham 1, Ala. –3221 First Ave. N.
Boston 10, Mass. –30 Pittsburgh St.
Chicago 8, Ill. –1500 S. Western Ave.
Detroit 35, Mich. –18954 James Couzens
Fort Worth 2, Tex. –1312 Waggoner Bldg.
Houston 20, Tex. –5817 Clinton Dr.
Kansas City 8, Mo. –1521 McGee St.
Los Angeles 1, Calif. –840 E. 60th St.
Minneapolis 26, Minn. –6480 Wayzata Blvd.
New York 7, N. Y. –30 Church St.
Pittsburgh 5, Pa. –2160 Noblestown Rd.
Pittsburgh 22, Pa. –1005 Liberty Ave.
Portland 4, Ore. –122 S. W. First Ave.
San Francisco 7, Calif. –75 Arkansas St.
Seattle 4, Wash. –1954 First Ave., S.
York, Pa. –Grantley Rd.

MECHANICAL TAGS SYSTEMS CO.
1810 E. Ave. N. E., Box 1565, Cedar Rapids, Iowa

MEDICAL SUPPLY COMPANY
1027 West State Street, Rockford, Illinois
**See ad page 269.

Distributors:

Albany, N. Y. –Tech Supply Co., Hamilton & Hawk Sts.
Albuquerque, N. M. –Acme Fire Appliance Co., 513 Los Arboles Ave.
Artesia, N. M. –Union Supply Co., P. O. 530
Atlanta, Ga. –Guardian Safety Equip. Co., 1091 Euclid Ave., N. E.
Austin, Texas–Wilson Xray & Surgical, 1908 Guadalupe
Binghamton, N. Y. –Gebler Associates, Inc., 556 Front St.
Birmingham, Ala. –Safety Engineering & Supply Co., 617 N. 13th St.
Boston, Mass. –American Fire Equipment, 717 Boylston St.
Boston, Mass. –General Equipment Co., 261 Franklin St.
Buffalo 13, N. Y. –American Allsafe Co., 1245 Niagara St.
Buffalo, N. Y. –Elwood Corp., 2180 Elmwood Ave.
Carlsbad, N. M. –Carlsbad Supply Co., P. O. Box 1042
Carlsbad, N. M. –Union Industrial Corp., P. O. Box 710
Casper, Wyoming–Casper Fire Extinguisher Service, 152 N. Kimball
Casper, Wyoming–Union Supply Co., P. O. Box 447
Charleston, S. C. –Cameron & Barkley Co., P. O. Box 906
Chicago, Ill. –Protective Equip. Co., 834 Orleans St.
Cincinnati 37, Ohio–Williams & Co. 7640 Reinhold Dr.
Cleveland 14, Ohio–Williams & Co., 3700 Perkins Ave.
Columbus 8, Ohio–Williams & Co., 900 Williams Ave.
Corpus Christi, Texas–Gulf Fire & Safety Equip., 716 N. Staples
Dallas, Texas–Settle Safety Supply Co., 5405 Swiss Ave.
Denver 2, Colo. –Roe Fire Protection, Inc., 1921 Blake St.
Detroit, Michigan–Kindy Optical Co., 9233 Grand River Ave.
El Paso, Texas–Jay L. Harman Fire Equip., 307 S. San Francisco
Farmington, N. M. –E. H. Foster's Son, 218 W. Main St.
Greensboro, N. C. –Smith Courtney Co., 241 S. Davie St.
Hobbs, N. M. –Union Supply Co., P. O. Box 1015
Houston, Texas–Ace Medical Supply Co., 1407 Calhoun
Houston, Texas–Mid-Continent Transmission & Supply, 5955 Armour
Hyde Park, N. Y. –Nichols Oxygen Service, East Hyde Park Rd.
Indiana, Pa. –National Mine Service Co., 1260 Maple Street
Indianapolis, Ind. –Orr Safety Equipment Co., 2431 E. Washington St.
Jacksonville, Fla. –Cameron & Barkley Co., P. O. Box 5837
Jacksonville 7, Fla. –Medical Supply Co., 4539 Beach Blvd.
Kansas City, Mo. –Safety, Inc., 17 E. 31st St.
Knoxville, Tenn. –Massey Surgical Supply, Inc., 411 W. Main Ave.
Largo, Fla. –Car-Mad Equip. Co., 570 North Indian Rocks Rd.
Linden, N. J. –Guardian Safety Equipment Co., 37 E. 21st St.
Little Rock, Ark. –Fire Appliance & Safety Co., 1114 W. Markham St.
Louisville, Ky. –Orr Safety Equipment Co., 1951 S. 10th St.
Memphis, Tenn. –Utilities Equipment Co., Inc., 821 S. Barksdale
Miami, Fla. –Medical Supply Co., 735 N. W. 12th Ave.
Milwaukee, Wis. –Protective Equip. Co., 2001 W. Capitol Dr.
Minneapolis, Minn. –Viking Safety Prod., Inc., 3431 E. 25th St.
Muskegon, Mich. –Kindy Optical Co., 302 Western Ave.
Nashville, Tenn. –Massey Surgical Supply Inc., 2110 W. End Ave.
New Orleans, La. –Industrial Fire & Safety, Inc., 1739 Baronne St.
New Orleans, La. –Standard Supply & Hdwe., 822 Tchoupitoulas
North Hollywood, Calif. –A. F. Johnson Co., 10430 Burbank Blvd.
Odessa, Texas–Settle Safety Supply Co., 207 N. Amburgey
Omaha 2, Neb. –Interstate Machinery & Supply, 1006 Douglas St.
Orlando, Fla. –Cameron & Barkley Co., P. O. Box 1971
Philadelphia, Pa. –Guardian Safety Equip. Co., 214 S. 45th St.
Phoenix, Ariz. –Arizona Safety Shoe & Equip., 4138 N. 19th Ave.
Pittsburgh 33, Pa. –Williams & Co., 901 Pennsylvania Ave.
Portland, Ore. –Sanderson Safety Supply Co., 935 S. E. Hawthorne Blvd.
Richmond 1, Va. –Southern Medical Supply Co., 1206 E. Main St.
Salt Lake City, Utah–Universal Safety & Fire Equip., 727 S. W. Temple St.
San Antonio 2, Texas–Hope Medical Supply, 821 Dallas St.
San Francisco, Calif. –Brenton Equip. Co., 374 Brannan St.
San Jose, Calif. –California Safety & Supply Co., 1309A Bayshore
Seattle, Wash. –J. E. Haseltine & Co., 510 First Ave.
Seattle, Wash. –Northwest Medical Supply Co., 1000 Western Ave.
Seattle, Wash. –Safety & Supply Co., 115 Blanchard St.
Shreveport, La. –Anchor Fire & Safety, Inc., 3816 Linwood Ave.
Spokane, Wash. –J. E. Haseltine & Co., 1101 N. Division St.
St. Louis, Mo. –Safety, Inc., 3230 Olive Street
Sundown, Texas–Union Supply Co., P. O. Box 218
Syracuse, N. Y. –Syracuse Safety Service, 1108 Spring St.
Tampa, Fla. –Cameron & Barkley Co., 107 S. Franklin
Tampa, Fla. –Surgical Equip. Co. of Fla., P. O. Box 10494
Toledo, Ohio–Williams & Co., 946 Kane St.
Tulsa, Okla. –Guardian Safety Equip. Co., 1742 S. Main St.
W. Palm Beach, Fla. –Medical Supply Co., 536 24th St.

Toronto 18, Ontario, Canada–Bell Electricord & Safety Ltd., 341 Bering Ave.
Calgary, Alberta, Canada–Canwest Safety Service Supplies Ltd., 135 3rd Ave., East
Vancouver 4, B. C., Canada–Fleck Bros. Ltd., 110 Alexander St.
Edmonton, Alberta, Canada–Soper Singleton Electric Co. Ltd., [illegible] 104 St.

MEFCO SALES & SERVICE, INC.
131 North Fifth Ave., Arcadia, California

Distributors:

Albany, N. Y. –Chauncey Van Alstine, Colonie & Water Sts.
Atlanta 3, Ga. –Shepherd Equip. Co., 900 Walton Bldg.
Binghamton, N. Y. –Binghamton Material Handling, Box 286
Birmingham 12, Ala. –Andress-Houst & Associates, P. O. Box 7386
Birmingham, Mich. –George Meaks Metal Products Co., P. O. Box 166
Brookline 46, Mass. –Robert Abel & Co., 112 Cypress St.
Burbank, Calif. –Patrick V. Gough Co., 2721 Empire Ave.
Chicago 39, Ill. –K. Lighthourne & Associates, 2618 N. Laramie Ave.
Cleveland 14, Ohio–Ohio Counting Scale, Inc., 1787 E. 24th St.
Denver 11, Colo. –J. H. Dorough Co., 1663 Central St.
Franklin, Ind. –Production-Flo Equip., Inc., 390 E. Monroe St.
Hartford 14, Conn. –Avery, Kretzmer, Olcott, Inc., 10 Jefferson St.
Hastings, Neb. –David R. Hill Co., 839 N. St. Joseph Ave.
Kansas City 1, Kansas–A. S. Kent & Co., 336 N. 7th Trafficway
Memphis 17, Tenn. –Byron E. Coleman & Assoc., P. O. Box 9035
Minneapolis 15, Minnesota–Minnesota Supply Co., 706 Portland Ave.
New York 36, N. Y. –Gilbert-Tucker Associates, 130 W. 42nd St.
Philadelphia 7, Pa. –Superior Scale & Supply Corp., 324-26 N. Ninth
Pittsburgh 1, Pa. –Acme Scale & Supply Co., 9427 Butler St.
St. Louis 4, Mo. –Anchor-St. Louis Scale Co., 2225 Gravois Ave.
San Francisco 3, Calif. –C. H. Bull Co., 115 Tenth St.
Seattle 4, Wash. –Industrial Products Co., 2911 First Ave., S.
Washington 2, D. C. –The J. H. Elliott Co., 2101 New York Ave., N. E.

MELFLEX PRODUCTS COMPANY, INC.
410 S. Broadway, Akron 8, Ohio

Distributors:

Atlanta, Ga. –National Floor Prod. Co., 20 Baker St., N. E.
Baltimore, Md. –Calvert Rug, Inc., 1400 Mondawmin Concourse
Baltimore, Md. –John H. Hampshire, Inc., 330 W. 24th St.
Boston, Mass. –Geo. J. Arafe Co., Inc., 83 High St.
Boston, Mass. –John R. Pray & Sons, 132 Tremont St.
Buffalo, N. Y. –United Metals, Inc. 232 Niagara St.
Camden, N. J. –Wm. S. Holmes, 1025 Mt. Ephrain Ave.
Chicago, Ill. –Du-Al Floor Co., Inc., 2519 W. Peterson Ave.
Chicago, Ill. –General Floor Corp., 2810 W. Addison St.
Chicago, Ill. –C. E. Korsgard Co., 5455 W. Division St.
Cleveland, Ohio–Owens Flooring Co., 17725 Euclid Ave.
Dallas, Tex. –Blue Diamond Co., 2722 Logan St.
Kansas City, Mo. –Hoover Bros., 1020 Oak St.
Milwaukee, Wis. –Wisconsin Metal Trims, 4821 N. 32nd St.
Minneapolis, Minn. –Brodun Sales Co., 20 Lakeside Ave.
New York, N. Y. –I. Beck & Sons, Inc., 236 Mott St.
New York, N. Y. –Perfo Mat & Rubber Co., Inc., 295 Fifth Ave.
Oklahoma City, Okla. –O'Neil Wholesale Flooring Dist., 1 E. Main St.
Omaha, Neb. –Industrial Chemical Laboratories, 1015 N. 14th St.
Omaha, Neb. –Porter-Trustin Co., 2300 Block N. 18th St.
Philadelphia, Pa. –Penn Sales, 521 York Ave.
Philadelphia, Pa. –United Metals, 160 N. 22nd St.
Pittsburgh, Pa. –Hobbs Rubber Co., 1003 Watson St.
Portland, Ore. –Cole & Cohagan, 3212 S. E. Hawthorne Blvd.
St. Louis, Mo. –Hamilton Co., Inc., 4239 Lindell Blvd.
San Antonio, Tex. –Acme Floor Finishers, Inc., 905 San Pedro Ave.
Seattle, Wash. –C. A. Newell Co., 735 Northlake Way.
Union, N. J. –Harry Rich Floors, Inc., 2234 Morris Ave.
Washington, D. C. –Potomac Rubber Co., Inc., 24 Kennedy St., N. W.

MENTOR PRODUCTS, INC.
7905 Mentor Ave., Mentor, Ohio
**See ad page 208.

MERRILL BROTHERS
56-28 Arnold Avenue, Maspeth 78, N. Y.
**See ad page 206.

Distributors:

Allentown, Pa. –William H. Taylor & Co., 250 Hamilton St.
Atlanta, Ga. –Noland Co., 512 Spring St.
Baltimore, Md. –Wm. H. Writing Co., Pratt & Gay Sts.
Birmingham, Ala. –Moore Handley Hdwe. Co., 27 S. 20th St.
Boston, Mass. –Chase Parker Co., 208 Congress St.
Brooklyn, N. Y. –Kasper & Kortzie, 563 Bushwick Ave.
Buffalo, N. Y. –Root Neal & Co., 44 Peabody St.
Carlstadt, N. J. –Julius Blum & Co.
Charlotte, N. C. –Henry Walke Co., 1310 S. Tryon St.
Chattanooga, Tenn. –Rogers Bailey Supply Co., 1146 Market St.
Chicago, Ill. –Industrial Sling Co., 332 S. Michigan Ave.
Chicago, Ill. –J. T. Ryerson & Son, P. O. Box 8000A
Cincinnati, Ohio–Williams & Co., 3231 Fredonia Ave.
Cleveland, Ohio–Williams & Co., 3700 Perkins Ave.
Columbus, Ga. –Columbus Iron Works
Columbus, Ohio–Williams & Co., 851 Williams Ave.
Dallas, Texas–Briggs Weaver Mch. Co., 3000 Hines Blvd.
Denver, Colo. –Plant Equip. Co., 1400 Market St.
Detroit, Mich. –C. F. Woodbury Co., 2832 E. Grand Blvd.
Hartford, Conn. –L. L. Ensworth Co., 270 Locust St.
Houston, Texas–Champion Industrial Sales Co., 5807 Navigation Blvd.

Continued on next page

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Indianapolis, Ind.—W. J. Holliday & Co., 545 W. McCarty St.
Jacksonville, Fla.—J. G. Christopher Co., 416 E. Bay St.
Kingsport, Tenn.—Kingsport Electric Co., 201 E. Market St.
Louisville, Ky.—Williams & Co., 1109 S. Preston St.
Los Angeles, Calif.—Cable Distr., Inc., 4903 E. Washington Blvd.
Miami, Fla.—Cameron & Barkley Co., 727 N. W. 1st Ave.
Milwaukee, Wis.—Shadbolt & Boyd Co., 413 N. 2nd St.
Nashville, Tenn.—Smalling & Co., 604 Demonbreun St.
Newark, N. J.—Lafayette Crane & Hoist Co., 800 Raymond Blvd.
New Haven, Conn.—C. S. Mersick & Co., 278 State St.
New Orleans, La.—Woodward Wight & Co., 451 Howard Ave.
New York, N. Y.—Topping Brothers, 159 Varick St.
Norfolk, Va.—Tidewater Supply Co., 501-535 W. 24th St.
Philadelphia, Pa.—E. M. Hanson & Co., 6800 Limekiln Pike
Pittsburgh, Pa.—Williams & Co., 901 Pennsylvania Ave.
Portland, Ore.—Woodbury & Co., 5852 N. Lagoon, Swan Island
Providence, R. I.—Congdon & Carpenter, 405 Promenade St.
Richmond, Va.—Industrial Supply Co., 1905 Westwood Ave.
Salt Lake City, Utah—Salt Lake Hardware Co., 105 N. 3rd West St.
Seattle, Wash.—Stack Steel & Supply Co., 500 Lander St.
St. Paul, Minn.—General Trading Co., 475 N. Prior Ave.
St. Louis 10, Mo.—Charles East & Co., 4030 Chouteau Ave.
Syracuse, N. Y.—Syracuse Supply Co., 314-61 W. Fayette St.
Tampa, Fla.—Bert Lowe Supply Co., 416 Ellamae Ave.
Toledo, Ohio—Williams & Co., 946 Kane St.
Tulsa, Okla.—Marshall Supply & Equip. Co., 920 E. Archer St.

METAL ARTS CO., THE, INC.
742 Portland Ave., Rochester 21, N. Y.

METROX, INC.
4335 Governor Printz Blvd., Wilmington 2, Dela.
**See ad page 275.

Branch Offices:

Bryn Mawr, Pa.—Roberts Rd.
Mount Prospect, Ill.—1420 W. Lincoln Ave.
Houston, Tex.—Fourth Floor, C. & I. Life Bldg.
San Francisco, Calif.—916 Kearny St.

Distributors:

Chicago 11, Ill.—National Cylinder Gas, Div. of Chemetron Corp., 840 N. Michigan Ave.

MEYER MACHINE, INCORPORATED
P. O. Box 131, Red Wing, Minnesota
**See ad page 66.

Branch Offices:

Baton Rouge, La.—Gregory-Salisbury & Co., Inc.
Dallas, Tex.—Wynne Snoots Co.
Houston, Tex.—Wynne Snoots Co.
Jackson, Miss.—Gregory-Salisbury & Co., Inc.
Los Angeles, Calif.—Leonard Schaffer Co.
Lubbock, Tex.—Wynne Snoots Co.
Memphis, Tenn.—Gregory-Salisbury & Co., Inc.
Mobile, Ala.—Gregory-Salisbury & Co., Inc.
New Orleans, La.—Gregory-Salisbury & Co., Inc.
Oklahoma City, Okla.—Wynne Snoots Co.
Pine Bluff, Ark.—Gregory-Salisbury & Co., Inc.
Pittsburgh, Pa.—James Hodges Co.

Distributors:

Oklahoma City 12, Okla.—Industrial Tank Consultants, 3801 Northwest 48th Street
San Jose, Calif.—California Safety & Supply, 996 North 4th Street
Tampa, Fla.—Safety Equipment Co. of Fla., 109 Hamiller St.

MICRO SWITCH
Division of Minneapolis-Honeywell Regulator Co.
11 W. Spring St., Freeport, Illinois

Branch Offices:

Atlanta 9, Ga.—500 Plaster Ave., N. E.
Boston 35, Mass.—1230 Soldiers Field Rd.
Charlotte 9, N. C.—212 Greystone Rd.
Chicago 80, Ill.—7350 N. Lincoln Ave.
Cleveland 3, Ohio—1001 E. 55th St.
Dallas 6, Tex.—6000 N. Central Expressway
Dayton 4, Ohio—1441 Milburn Ave.
Denver 22, Colo.—2130 S. Dahlia St.
Detroit 27, Mich.—13631 Plymouth Rd.
Hartford 14, Conn.—885 Wethersfield Ave.
Indianapolis 2, Ind.—1905 W. Eighteenth St.
Long Island City 1, N. Y.—24-30 Skillman Ave.
Los Angeles 22, Calif.—4620 Telegraph Rd.
Milwaukee 10, Wis.—5520 W. Burleigh St.
Minneapolis 8, Minn.—2753 Fourth Ave., S.
Philadelphia 32, Pa.—3345 W. Hunting Park Ave.
Phoenix, Ariz.—4125 N. Seventh Ave.
Portland 14, Ore.—2600 S. E. Belmont
Rochester 11, N. Y.—941 Maple St.
St. Louis 10, Mo.—2146 Hampton Ave.
Salt Lake City 15, Utah—2280 S. Main St.
San Diego 10, Calif.—1515 Morena Blvd.
San Francisco 24, Calif.—2 Dorman Ave.
Seattle 9, Wash.—401 Pontius Ave.
Union, N. J.—P. O. Box 161
Washington 16, D. C.—4926 Wisconsin Ave.
Wichita, Kansas—2801 S. Madison

Montreal 28, Quebec, Canada—Honeywell Controls, Limited, 6277 Upper Lachine Road
Ottawa, Ontario, Canada—Honeywell Controls, Ltd., 1478 Merivale Rd.
Toronto 17, Ontario, Canada—Honeywell Controls, Ltd., Vanderhoof Ave., Leaside

MIDWEST GLOVE CO., INC.
1744 N. Damen Ave., Chicago 47, Ill.

Branch Offices:

Los Angeles, Calif.—1816 W. 8th St.

MILBURN COMPANY
3246 E. Woodbridge, Detroit 7, Mich.

MILLER EQUIPMENT COMPANY, INCORPORATED
13th & New Streets, Franklin, Pennsylvania
**See ad page 166.

Distributors:

Akron, Ohio—Acme Safety Products, 387 Storer Ave.
Albuquerque, N. M.—Central New Mexico Equip. Co., 3712 Edith Blvd., N. E.
Atlanta, Ga.—Southeastern Safety Appliance, 730 Miami Circle NE
Baltimore, Md.—Carey Machinery & Supply, 3501 Brehms Lane
Baton Rouge, La.—Guardian Safety Equip., 3615 Capitol Hgts. Ave.
Binghamton, N. Y.—Gebler Associates, Inc., 556 Front St.
Birmingham, Ala.—Safety Engineering & Supply Co., 617 N. Tenth St.
Boston, Mass.—General Equipment Co., 261 Franklin St.
Brooklyn, N. Y.—Pulmosan Safety Equip., 644 Pacific St.
Buffalo, N. Y.—American Allsafe Co., 1245 Niagara St.
Buffalo, N. Y.—Protective Equip. Supply Co., 1270 Broadway
Buffalo, N. Y.—Steinwachs' Safety Supply, 1573 S. Park St.
Charleston, W. Va.—Safety First Supply Co., 1104 Quarrier St.
Chattanooga, Tenn.—C. D. Genter Co., 2109 Broad St.
Chattanooga, Tenn.—Power Distributors Supply, Market St.
Chicago, Ill.—Protective Equipment, Inc., 634 Orleans St.
Cincinnati, Ohio—Orr Safety Supply Co., 2853 Colerain Ave.
Cleveland, Ohio—Safety First Supply Co., 4251 W. 35th St.
Cocoa, Fla.—J. G. Christopher Co., 534 St. Johns St.
Dallas, Tex.—Settle Safety Supply, 5405 Swiss Ave.
Dayton, Ohio—Dayton Safety Supply, 11 Longworth St.
Des Moines, Iowa—Iowa Safety Equipment Co., 414-416 Twelfth St.
Des Moines, Iowa—Wright Tree Service Co., 2175 Ingersoll Ave.
Detroit, Mich.—Argus Supply Co., 4340 East Division
Detroit, Mich.—Boyer-Campbell Co., 6540 St. Antoine St.
Duluth, Minn.—J. F. Killorin, 203 N. Central Ave.
Erie, Pa.—Erie Industrial Supply Co., 15th & Cherry Sts.
Fruitland, New Mexico—Settle Safety Supply Co.
Honolulu, Hawaii—Gaspro, Ltd., 2305 Dillingham Blvd.
Houston, Tex.—Guardian Safety Equip. Co., 200 Sandman St.
Indianapolis, Ind.—Orr Safety Equipment Co., 3106 E. Washington
Jamaica, N. Y.—Beacon Safety Products, 128-37 237th St.
Kalamazoo, Mich.—Safety Services, Inc., 1903 W. Main St.
Knoxville, Tenn.—Safety Equip. Distributing, 830 W. Main Ave.
Long Island City, N. Y.—W. S. Wilson Corp., 47 Thirty Eighth St.
Los Angeles, Calif.—E. D. Bullard Co., 6719 S. Figueroa
Louisville, Ky.—Orr Safety Equipment Co., 1551 S. Tenth St.
Lowell, Mass.—Mathias Hart Co., 11-13 Shattuck
Memphis, Tenn.—Clement Safety Equip., 720 S. Third St.
Miami, Fla.—Helco Distributors, 18480 W. Dixie Hwy.
Milwaukee, Wis.—Line Material Industries, 700 W. Michigan St.
Milwaukee, Wis.—Protective Equipment, Inc., 2001 W. Capitol Dr.
Minneapolis, Minn.—Viking Safety Products, 3431 E. 25th St.
Mobile, Ala.—Safety Engineering & Supply Co., Box 111
Nashville, Tenn.—Smalling & Co., 604 Demonbreun St.
Newark, N. J.—Safeguard Industrial Equip., 271 Verona Ave.
New Haven, Conn.—Abem Safety Equip. Co., 2 Eld St.
Norfolk, Va.—Goodman Electric Supply, 3610 Hampton Blvd.
Odessa, Tex.—Settle Safety Supply, 207 N. Amburgey
Oklahoma City, Okla.—Mid-Continent Transmission & Supply, 4 N. E. 27th St.
Philadelphia, Pa.—Industrial Products Co., 2820 N. Fourth St.
Pittsburgh, Pa.—Safety First Supply Co., 425 Magee St.
Portland, Oregon—Sanderson Safety Supply, 935 S. E. Hawthorne Blvd.
Richmond, Va.—Industrial Supply Co., 1905 Westwood Ave.
Roanoke, Va.—Jones Welding Supply, 225 Eleventh St., S. E.
Rock Island, Ill.—Protective Equipment, Inc.
Saginaw, Mich.—McGill Sales, 1905 S. Michigan Ave.
Saginaw, Mich.—National Safety Products, 116 N. Hamilton St.
Seattle, Wash.—Safety & Supply Co., 115 Blanchard St.
Spokane, Wash.—Safety & Supply Co., N. 219 Division St.
St. Louis, Missouri—Missouri Safety Co., 9420 Watson Industrial Pk.
St. Louis, Missouri—Pulmosan Safety Equip., 1007 Washington Ave.
Syracuse, N. Y.—Syracuse Safety Service, 1108 Spring St.
Tampa, Fla.—Safety Equip. Co. of Fla., 109 Hamiller St.
Tonawanda, N. Y.—Crane Flasher Service Co., 307 Fairlane Ave.
Waco, Tex.—Tolamiss Sales, 3104 Alexander
Washington, D. C.—Carey Machinery & Supply
West Hartford, Conn.—Industrial Safety Supply, 574 New Park Ave.
Wichita, Kansas—Mid-Continent Transmission & Supply Co., 2027 N. Broadway
Wildwood, Fla.—J. C. McCormic, Box 383
Worcester, Mass.—Everett J. Baird, 71 Olean St.

Calgary, Alberta, Canada—Safety Supply Co., 1216 Ninth Ave., S. E.
Edmonton, Alberta, Canada—Safety Supply Co., 10206 106th St.
Montreal, Quebec, Canada—Safety Supply Co., 5545 St. James St. W.
Toronto, Ontario, Canada—Safety Supply Co., 214 King St., East
Vancouver, B. C., Canada—Safety Supply Co., 240 E. 10th Ave.
Winnepeg, Manitoba, Canada—Safety Supply Co., 166 Osborne St. S.

MINE SAFETY APPLIANCES CO.
201 N. Braddock Ave., Pittsburgh 8, Pa.
**See ad page 57.

Branch Offices:

Abington, Virginia—P. O. Box 608
Albany 7, N. Y.—11 N. Pearl St.
Atlanta 9, Ga.—1343 Spring St., N. W.
Baltimore 2, Md.—412 Water St.
Baton Rouge, La.—10645 Allyson St.
Beaumont, Texas—5880 Clinton Ave.
Benton, Ill.—110 Hudelson St.
Birmingham 6, Ala.—2500 12th Ave., N.
Bluefield, W. Va.—1513 Bluefield Ave.
Boston 16, Mass.—30 Huntington Ave.
Bridgeport, W. Va.—523 Pennsylvania Ave.
Buffalo 9, N. Y.—1718 Main St.
Butte, Mont.—2419 Princeton Ave.
Charleston 1, W. Va.—321 Masonic Temple Bldg.
Charlotte, N. C.—3214 Stonybrook Rd.
Chicago 1, Ill.—144 W. Superior St.
Cincinnati 2, Ohio—704 Race St.
Cleveland 12, Ohio—17901 Euclid Ave.
Comstock Park, Mich.—365 Lantern Dr.
Corpus Christi, Texas—4722 Wexford Dr.
Cuyahoga Falls, Ohio—1122 Broad Blvd.
Dallas 7, Texas—1630 Oak Lawn Ave.
Dayton 19, Ohio—2600 Far Hills Rd.
Denver 7, Colo.—2916 Forest St.
Detroit 3, Michigan—19725 Ralston,
Duluth, Minn.—1703 E. Third St.
Fairmount, W. Va.—1313 Peacock Lane
Findlay, Ohio—1520 North Court
Harlan, Ky.—Third St., Rio Vista
Houston 6, Texas—3745 Greenbrier Dr.
Indianapolis, Ind.—7428 Woodside Dr.
Johnstown, Pa.—220 Leila St.
Kansas City, Kan.—6530 Metcalf, Overland Park,
Kansas City 8, Mo.—2803 Cherry St.
Knoxville 19, Tenn.—507 Rockingham Dr.
Los Angeles 7, Calif.—115 W. 25th St.
Memphis 17, Tenn.—5232 Sequoia Ave.
Milwaukee 8, Wis.—1348 N. 37th St.
Minneapolis 8, Minn.—2814 DuPont Ave., S.
Newark, Del.—1125 Mayflower Dr., Meadowood
New Orleans 15, La.—300 Toulouse St.
New York, N. Y.—60 E. 42nd St.
North Pekin, Ill.—119 Berry Rd., Marquette Heights
Omaha 32, Neb.—4806 Dodge St.
Orlando, Fla.—2808 Norris Ave.
Philadelphia 3, Pa.—1614 Summer St.
Pikeville, Ky.—P. O. Box 546
Pittsburgh 8, Pa.—7517 Penn Ave.
Portland 12, Oregon—3743 N. E. 35th Pl.
Portsmouth, N. H.—232 Wibird St.
Richmond, Virginia—521 E. Main St.
Salt Lake City 4, Utah—257 Rio Grande St.
San Francisco 3, Calif.—1255 Howard St.
Scranton 10, Pa.—530 Clay Ave.
Seattle 4, Wash.—71 Columbia St.
Spokane, Wash.—40 W. 39th Ave.
St. Louis 3, Mo.—1915 Washington Ave.
Stratford, Conn.—405 Barnuna, Ext.
Syracuse, N. Y.—712 State Tower Bldg.
Tucson, Ariz.—1906 E. 18th St.
Tulsa 3, Okla.—1015 S. Cincinnati Ave.
Uniontown, Pa.—624 Fayette National Bank Bldg.
Washington 6, D. C.—1346 Connecticut Ave., N. W.
Williamson, W. Va.—38 Sunset Blvd.

International Division:

AFRICA—Mine Safety Appliances Co. (Africa) (Pty.) Ltd.
N'Dola, Northern Rhodesia, Africa—P. O. Box 27
Capetown, South Africa—P. O. Box 4640
Durban, South Africa—P. O. Box 1086
Johannesburg, South Africa—(Headquarters) 44 Richard St.
Odendaalsrus, South Africa—P. O. Box 248
Port Elizabeth, South Africa—P. O. Box 1309
Pretoria, Transvaal, South Africa—P. O. Box 2103

CANADA—Mine Safety Appliances Co. of Canada, Ltd.
Calgary, Alberta, Canada—3632 Burnsland Rd.
Edmonton, Alberta, Canada—9636 Jasper Ave.
Vancouver, British Columbia, Canada—293 11th Ave., E.
Winnipeg, Manitoba, Canada—1790 St. Matthews Ave.
Sydney, Nova Scotia, Canada—150 Charlotte St.
Kirkland Lake, Ontario, Canada—54 Wishman St.
London, Ontario, Canada—493 Dunedin Dr.
Ottawa, Ontario, Canada—2041 Alta Vista Dr.
Toronto, Ontario, Canada—500 MacPherson Ave. (Headquarters)
Montreal, Quebec, Canada—1265 Ducharme Ave.
Chicoutimi Nord, P. Q., Canada—200 Rue Richmond
Bulawayo, Southern Rhodesia—P. O. Box 1686
Salisbury, Southern Rhodesia—P. O. Box 2075
Glasgow E-3, Scotland, Gt. Brit.—Mine Safety Appliances Co., Ltd., Queenslie Industrial Estate—New Edinburgh Rd.
Milano, Italy—Mine Safety Appliances Italiana S. p. A. Via S. Grovanna, D'urco 4
Friedrich-Krause-Ufer 24, Berlin (West)—Auergesellschaft, Gmb#
Calle Azahares 47 (Colonia Santa Maria Insurgentes), Mexico 4, D. F.—Mine Safety Appliances De Mexico S. A. de C. V.
Lima, Peru—Casilla 733

VENEZUELA—Mine Safety Appliances de Venezuela C. A.
Victoria, Caracas, Venezuela—Calle El Progress Av.
Puerto La Cruz, Venezuela—KLM 4-Carretera Blanca—Apartado 4152
Maracaibo, Venezuela—Avenids Los Haticos No. 117-24
Puerto Ordaz, Venezuela

MINNEAPOLIS-HONEYWELL REGULATOR COMPANY
2753 Fourth Avenue South, Minneapolis 8, Minnesota

Branch Offices:

Akron, Ohio—488 Glenwood Avenue
Albany, New York—45 Colvin Avenue
Albuquerque, N. M.—2502 Garfield Ave SE
Amarillo, Tex.—1601 E. Third Street
Anchorage, Alaska—P. O. Box 1477 (826 Whitney Road)
Appleton, Wis.—P. O. Box 272 (925 W. Northland Ave.)
Atlanta, Ga.—500 Plasters Ave., NE
Austin, Tex.—3304 Bailey Lane
Avoca (Scranton) Pa.—743 Main Street
Baltimore, Md.—4612 Harford Road
Baton Rouge, La.—1545 N. Foster Drive
Beaumont, Tex.—472 N. Freeway
Billings, Mont.—106 Eleventh St. W.
Binghamton, N. Y.—1200 Arterial Highway
Birmingham, Ala.—2616 7th Ave. S.
Boston, Mass.—1230 Soldiers Field Rd.
Buffalo, N. Y.—1606 Kenmore Avenue
Corpus Christi, Tex.—915 Westchester Dr.
Champaign, Illinois—105 West Green Street
Charleston, W. Va.—1416 Kanawha Blvd. E.
Charlotte, N. C.—212 Greystone Road
Chattanooga, Tenn.—3223 Brainerd Road
Chicago, Ill.—7350 N. Lincoln Avenue
Cincinnati, Ohio—7645 Production Drive
Cleveland, Ohio—1001 East 55th Street
Columbia, S. C.—P. O. Box 5115 (4478 Fort Jackson Blvd.)
Columbus, Ohio—4272 Indianola Ave.
Dallas, Tex.—6000 N. Central Expressway
Davenport, Iowa—2010 E. River Street
Dayton, Ohio—1441 Milburn Avenue
Denver, Colo.—2130 S. Dahlia
Des Moines—P. O. Box 2597 (4730 SW 9th Street)
Detroit, Mich.—Box 3901 Strathmoor Sta. (13631 Plymouth Road)
Duluth, Minn.—926 E. Second Street
East Providence, R. I.—66 Taylor Drive
East Syracuse, N. Y.—P. O. Box 567 Arterial Road

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

El Paso, Tex.—2006 Grant Avenue
Erie, Pa.—230 East Eighth Street
Eugene, Oregon—P. O. Box 70 (150 Adams St.)
Evansville, Ind.—116 N. St. Joseph Ave.
Fairbanks, Alaska—P. O. Box 171
Fargo, N. D.—820 6th Avenue N
Fort Wayne, Ind.—U. S. Highway 30 East at Meyer Rd.
Fort Worth, Tex.—3145 St. Louis Street
Fresno, Calif.—446 Blackstone Blvd.
Grand Rapids, Mich.—21-31 N. Ottawa Ave.
Greensboro, N. C.—P. O. Box 5036 (1216 Perry Street)
Greenville, S. C.—42 Grand Avenue
Harrisburg, Pa.—2741 Paxton Street
Hartford, Conn.—685 Wethersfield Avenue
Harvey, Ill.—P. O. Box 170 (250 W. Sibley Blvd., Dolton)
Honolulu, Hawaii—618 Coral Street
Houston, Tex.—P. O. Box 2631 (5440 Gulf Freeway)
Huntsville, Ala.—Suite 17, Holiday Office Center
Idaho Falls, Idaho—541 Second Street
Indianapolis, Ind.—1905 W. 18th Street
Jackson, Miss.—535 College Street
Jacksonville, Fla—6957 Lillian Road
Kansas, Mo.—4650 E. 50 Highway
Knoxville, Tenn.—4617 Old Central Avenue Pike
Lansing, Mich.—521 N. Washington Ave.
Little Rock Ark.—608 W. Third Street
Long Island City, N. Y.—24-30 Skillman Ave.
Los Angeles, Calif.—4620 Telegraph Road
Louisville, Ky.—2000 S. Brook Street
Lubbock, Tex.—1622 6th Street
Madison, Wis.—2702 Monroe Street
Melbourne, Fla.—222 Bunker Street
Memphis, Tenn.—1530 Madison Avenue
Miami, Fla.—2137 NW 7th Street
Milwaukee, Wis.—9520 W. Burleigh St.
Minneapolis, Minn.—621 E. Hennepin Ave.
Mobile, Ala.—1869 Duval Street
Nashville, Tenn.—4012 Hillsboro Road
New Haven, Conn.—141 Fitch Street
New Orleans, La.—P. O. Box 8038 (2389 Prentiss Avenue)
Norfolk, Va.—3535C Tidewater Drive
Odessa, Tex.—2521 N. Jackson
Oklahoma City, Okla.—4501 N. Cooper
Omaha, Neb.—403 N. Saddle Creek Road
Peoria, Ill.—603 W. Lake Avenue
Philadelphia, Pa.—3345 W. Hunting Park
Phoenix, Ariz.—4125 N. Seventh Street
Pittsburgh, Pa.—4120 Brownsville Road
Portland, Maine—Box 1699, Thompson's Pt.
Portland, Oregon—2660 SE Belmont
Richland, Wash.—1329 Geo. Washington Way
Richmond, Va.—2101 W. Laburnum Ave.
Roanoke, Va.—2205 Westover Ave. SW
Rochester, N. Y.—841 Maple Street
Sacramento, Calif.—1402 E. Street
Saginaw, Mich.—1838 N. Michigan Ave.
St. Clair Shores, Mich.—24725 Harper Ave.
St. Louis, Mo.—2146 Hampton Ave.
Salt Lake City, Utah—2280 Main Street
San Antonio, Tex.—2008 Military Dr. NW
San Diego, Calif.—2153 Moore Street
San Francisco, Calif.—2 Doman Avenue
Santa Clara, Calif.—949 Main Street
Seattle, Wash.—401 Pontius Ave.
Shreveport, La.—1624 W. Kirby Place
Sioux Falls, S. D.—213 N. Nesmith Avenue
South Bend, Ind.—220 S. William Street
Spokane, Wash.—North 1007 Columbus St.
Tacoma, Wash.—125 Del Monte
Tampa—3903 Grand Central Ave.
Toledo, Ohio—5624 Secor Road
Tucson, Ariz.—2020 East 13th Street
Tulsa, Okla.—5923 E. 31st Street
Union, N. J.—P. O. Box 161 (U. S. Route 22 at Springfield Line)
Washington, D. C.—4928 Wisconsin Avenue
Wichita, Kan.—P. O. Box 3985 (2801 South Madison Street)
Wilmington, Del.—838 N. Union Street
Youngstown, Ohio—3330 South Avenue

MINNESOTA MINING AND MANUFACTURING COMPANY
900 Bush Avenue, St. Paul 6, Minnesota
**See ad page 143.

Branch Offices:

Atlanta 18, Ga.—732 Ashby St., N. W.
Bedford Park, Ill.—6850 S. Harlem Ave., Argo P. O.
Buffalo 5, N. Y.—330 Greene St., Box 2012
Cincinnati 37, Ohio—4825 Para Dr.
Cleveland 30, Ohio—12200 Brookpark Rd.
Dallas 20, Tex.—2121 Santa Anna Ave.
Detroit 2, Mich.—411 Piquette Ave.
Honolulu 14, Hawaii—1410 Kapiolani Blvd.
Newton Center 59, Mass.—1330 Centre St.
Los Angeles 22, Calif.—6023 S. Garfield Ave.
Philadelphia 20, Pa.—5698 Rising Sun Ave.
Ridgefield, N. J.—700 Grand Ave.
St. Louis 32, Mo.—10725 Baur Blvd.
St. Paul 1, Minn.—367 Grover St.
Seattle 4, Wash.—3663 First Ave., South
South San Francisco, Calif.—320 Shaw Rd.

MINUTE COMPANY, THE
423 Riverside Drive, Crystal Lake, Ill.

MODERN FIRST AID NECESSITIES CO.
737 W. Randolph St., Chicago 6, Ill.

MODERN MACHINE TOOL CO.
2005 Losey St., Jackson, Mich.
**See ad page 221.

Distributors:

Atlanta, Ga.—Chandler Machinery Co., 120 Houston St.
Baltimore 3, Md.—L. A. Benson Co., Box 2137
Baltimore, Md.—Carey Machinery & Supply, 3501 Brehms Lane
Baton Rough, La.—Oliver Van Horn Co., 1200 Neosho St.
Bay Village, Ohio—Behrend Machinery Inc., Box 9717
Berkeley 10, Calif.—Moore Machinery Co., 7th & Carleton
Birmingham 2, Ala.—Moore-Handley Hardware Co., Inc., 27 S. 20th St.
Birmingham, Ala.—Robert C. Ward, 1505 42nd St.
Birmingham, Ala.—Young & Vann Supply Co., 1725-1731 First Ave.
Buffalo, N. Y.—R. L. Crane Machinery, 296 Delaware Ave.
Charlotte, N. C.—Apex Machine Tool Supply, 3107 Wilkinson Blvd.
Charlotte, N. C.—Henry Walke Co., P. O. Box 1105
Chicago, Ill.—E. L. Essley Machinery Co., 565 W. Washington
Chicago, Ill.—Jos. T. Ryerson & Son, P. O. Box 8000-A
Chippewa Falls, Wis.—Neff, Kohlbusch & Bissell, Inc., Box 196
Cincinnati, Ohio—E. A. Kinsey Co., 327 W. 4th St.
Cleveland, Ohio—Geo. D. Miller Co., 3204 St. Clair
Cleveland, Ohio—J. T. Ryerson & Son, 5300 Lakeside
Cleveland, Ohio—Wm. K. Stamets Co., 410 Leader Bldg.
Cleveland, Ohio—Strong, Carlisle & Hammond, 1394 W. 3rd
Cleveland, Ohio—Tri-State Machinery, 2036 E. 22nd
Columbia, S. C.—Tidewater Supply Co., Inc., P. O. Box 1138
Columbus, Ohio—E. A. Kinsey Co., 1020 W. 5th
Dallas, Tex.—C. J. Harter Machinery, Box 35324-Airlawn Sta.
Dayton, Ohio—Seifreat-Eistad Mach., P. O. Box 588
Dearborn, Mich.—Harvey Goldman & Co., 3900 Schaefer Highway
Dearborn, Mich.—James Eng. & Machinery, 2451 Monroe Blvd.
Denver 16, Colo.—Mine & Smelter Supply Co., P. O. Box 9041, Terminal Station
DesMoines, Iowa—Moehlenpah Engineering, 2905 Vine St., W.
Detroit, Mich.—Associated Machinery Sales, 147 Joseph Campau
Detroit, Mich.—Don Gifford Co., 1625 W. Fort
Detroit, Mich.—J. Lee Hackett Co., 1981 E. Milwaukee
Detroit, Mich.—McKee Kenyon & Co., 1624 W. Fort
Detroit, Mich.—Peninsular Machinery, 1978 J. James Couzens
Detroit, Mich.—Production Machinery Sales, 4945 St. Aubin
Detroit, Mich.—Chas. A. Strelinger Co., P. O. Box 4674
Detroit, Mich.—Strong, Carlisle & Hammond, 6450 St. Antoine
Detroit, Mich.—J. T. Ryerson & Son, 1600 E. Euclid
Detroit, Mich.—Taylor-Thompson Machinery, 8095 Livernois
Duluth, Minn.—W. P. & R. S. Mars Co., 322-324 W. Michigan
Flourtown, Pa.—J. A. Carlin Co., 1110 Bethlehem Pike
Grand Rapids, Mich.—Nemic Machinery Co., 20 Cottage Grove
Grand Rapids, Mich.—Taylor Thompson Mach. Co., 2157 Division Ave., S.
Houston, Tex.—C. J. Harter Machinery, 3838 Navigation Blvd.
Houston, Tex.—Huster Machine Tool Co., 3560 W. 12th
Houston, Tex.—A. J. Rod, Co., 5011 Navigation Blvd.
Indianapolis, Ind.—E. A. Kinsey Co., 1550 Stadium Dr.
Indianapolis, Ind.—Oatis Machinery, P. O. Box 23105
Indianapolis, Ind.—State Machinery Co., 1800 N. Meridian
Kansas City, Mo.—Nuetzel Mach., 212 Jewell Bldg.
Kansas City, Mo.—Hamen Machinery & Supply, 1823 Walnut St.
Kansas City, Mo.—Moehlenpah Engineering, 4550 Main, Rm. 205
Lakewood 7, Ohio—Cleveland Duplex Mach., 14625 Detroit Ave.
Lauderdale-by-the-Sea, Fla.—Jimmy Vann, 4212 El Mar Drive
Los Angeles, Calif.—Harron, Rickard & McCone, 3850 Santa Fe
Los Angeles, Calif.—Los Angeles Stores Div., 3200 S. Garfield
Louisville, Ky.—Louisville Machinery Sales, 212 Eller Ave.
Memphis, Tenn.—Hicks Machine Tool Co., 673 S. Cooper St.
Milwaukee, Wis.—E. L. Essley Machinery Co., 5056 N. Port Washington
Milwaukee, Wis.—Gate Co., 606 W. Wisconsin
Milwaukee, Wis.—Neff, Kohlbusch & Bissell, Inc., 5932 W. Appleton
Minneapolis, Minn.—Neff, Kohlbusch & Bissell, P. O. Box 5444
Minneapolis, Minn.—J. T. Ryerson & Son, Inc., 628 Lumber Ex. Bldg.
Moline Ill.—John J. Normoyle Co., 607 Third Ave.
New Orleans, La.—Oliver Van Horn Co., 1742 St. Charles
New Port News, Va.—Noland Co., Inc., P. O. Box 974
Norfolk, Va.—Henry Walke Co., P. O. Box 1041
Omaha, Neb.—Fuchs Machinery & Supply, 521 S. 15th St.
Pittsburgh, Pa.—Stanley Berg & Co., Parkway Center, P. O. Box 8485
Pittsburgh, Pa.—Merit Machinery Inc., 2311 Babcock Blvd.
Pittsburgh, Pa.—Wm. K. Stamets Co., Jenkins Arcade Bldg.
Portland, Ore.—Portland Machinery Co., 208 S. W. 1st
Rochester, N. Y.—Syracuse Supply, 311 Alexander
St. Louis, Mo.—Hoffman-Marquard Mach., 1524-27 N. Broadway
St. Louis, Mo.—Moehlenpah Engineering, 1313 S. Vendeventer
San Francisco, Calif.—Harron, Rickard & McCone, 2070 Bryant St.
Schenectady, N. Y.—Syracuse Supply, P. O. Box 447
Seattle, Wash.—J. T. Ryerson & Son, Inc., 1200 Fourth Ave., S.
Sioux City, Iowa—Sioux Machinery & Supply, 326 Benson Bldg.
Syracuse, N. Y.—Syracuse Supply, 314-318 W. Fayette
Toledo, Ohio—Johnson Ruth Machinery, 2449 Hill
Toledo, Ohio—Oatis Machinery, P. O. Box 69-Sta. F.
Toledo, Ohio—Jack H. Ruth Co., 983 Front St.
Toledo, Ohio—Taylor-Thompson Mach., 1313 Jefferson
Tulsa, Okla.—Marshall Sup. & Equip., 920 E. Archer
Tulsa, Okla.—Barr McDermott, Inc., 114 W. Archer
Westwood, N. J.—Ferdinand J. Snow Co., 333 Old Hook Rd.
Wynnewood, Pa.—E. A. Lynch Machinery Co., 29 E. Wynnewood Rd.

MONAGHAN, J. J., CO., INC.
500 Alcott St., Denver 4, Colorado

MONTE GLOVE COMPANY
Monte Lane, Maber, Mississippi

Branch Offices:

Shelbyville, Ind.—34 E. Jackson Street

MOORE, SAMUEL, & COMPANY
Mentua, Ohio

Branch Offices:

Atlanta 5, Ga.—92 Roswell Court, N. E.
Bellevue, Wash.—P. O. Box 101
Chicago 20, Ill.—9426 S. Winchester Ave.
Dallas 14, Tex.—6339 Saratoga Circle
Los Angeles 27, Calif.—5205 Hollywood Blvd.
Newtown, Conn.—R. D. 3, Pocono Rd.
Philadelphia 44, Pa.—Suite 208, 500 W. Chelten Ave.

MORLAND ASSOCIATES
63 South Ave., Garwood, N. J.
**See ad page 94.

MORRISON-PELSUE CO.
2001 S. Bannock St., Denver 23, Colo.
**See ad page 202.

Distributors:

Baton Rouge, La.—Dave Ciampitti, Box 2763
Binghampton, N. Y.—Gabler Assoc., Box 739
Chicago, Ill.—Kellogg Switchboard & Supply Co., 6699 S. Cicero Ave.
Chicago 6, Ill.—Leich Sales Corp., 427 W. Randolph St.
Chicago 23, Ill.—Tallmon Equip. Co., 3921 W. 31st
Columbus, Ohio—Buckeye Telephone & Supply Co., 1250 Kinnear Rd.
Houston 7, Tex.—Safety Engineering & Equip. Co., 4917 Feagan
Indianapolis, Ind.—Dock Equip. Co., 1900 Northwestern Ave.
Kansas City, Mo.—Glenn Eastwood, Box 263
Lincoln 1, Neb.—Korsmeyer Electric Supply Co., 432 S. 9th St.
Lubbock, Tex.—Leonard Stephens, Box 1105
Milwaukee 14, Wis.—Pagel Safety Products, Inc., 4615 W. National Ave.
Newark 4, N. J.—Davis Emergency Equip. Co., 45 Hallock St.
North Hollywood, Calif.—A. F. Johnson Co., 10430 Burbank Blvd.
Northlake, Ill.—Automatic Electric Sales Corp.
Oklahoma City, Okla.—Cliff Carter
Oklahoma City, Okla.—Frank Morris, 1211 Bedford
Oklahoma City, Okla.—Frank Shearn, 2601 Berkshire
Oklahoma City 18, Okla.—Utility Equip. Co., Box 9507
Salt Lake City 4, Utah—W. H. Pingree Co., 1055 S. 7th W.
Seattle 1, Wash.—National Barricade Co., Inc., 3201 Western Ave.
Spokane, Wash.—Tisling & Powell, East 706 Sprague Ave.
Tampa, Fla.—Florida Electric Supply Co., Inc., Box 2602

Honolulu 17, Hawaii—National Barricade Co. Inc., 2849 Kalihikapu St.
Toronto 16, Ont., Canada—Automatic Electric Sales of Canada, Ltd., 185 Bartley Drive

MORRISON PRODUCTS
16816 Waterloo, Cleveland 10, Ohio

MORSE MANUFACTURING CO., INC.
727 W. Manlius St., E. Syracuse, N. Y.
**See ad page 208.

Distributors:

Birmingham, Ala.—Safety Eng. & Supply Co., Inc., 617 N. 10th St.
Brooklyn 17, N. Y.—Pulmosan Safety Equip. Corp., 644 Pacific St.
Buffalo 13, N. Y.—American Allsafe Co., 1245 Niagara St.
Buffalo 20, N. Y.—Steinwach's Safety Supply, 1573 S. Park Ave.
Cincinnati, Ohio—Orr Safety Equip. Co., 2850 Colerain Ave.
Dayton 2, Ohio—Dayton Safety Supply, 316 Longworth St.
Detroit 2, Mich.—Bover-Campbell Co., 801 W. Baltimore Ave.
E. Orange, N. J.—E. H. Notte Safety Appliances, 308 Main St.
E. Orange, N. J.—New Jersey Safety Equip. Co., 299 Park Ave.
Hartford 10, Conn.—Industrial Safety Supply, 574 New Park Ave., W.
Jacksonville, Fla.—White Star Chem. Corp., P. O. Box 4615
Kalamazoo, Mich.—Safety Services, Inc., 1903 W. Main St.
Louisville 2, Ky.—Orr Safety Equip. Co., 300 E. Main St.
Milwaukee 12, Wis.—O'Donohue Industries, 3618 N. Hubbard St.
Newark 4, N. J.—Safeguard Ind. Equip. Co., 271 Verona Ave.
Philadelphia 33, Pa.—Industrial Products Co., 2820 N. 4th St.
Rochester, N. Y.—Rochester Safety Equip. Co., 83 Howell St.
Syracuse 1, N. Y.—Syracuse Supply Co., New Court Rd.

MORTON SALT COMPANY
110 N. Wacker Dr., Chicago 6, Ill.

Branch Offices:

Atlanta, Ga.—3030 Peachtree Rd.
Burlingame, Calif.—1710 Trousdale
Charlotte, N. C.—1212 Johnston Bldg., 213-214 S. Tryon St.
Dallas 19, Tex.—3636 Lemmon Ave.
Denver 3, Colo.—933 Sherman St.
Des Moines 9, Iowa—218 6th Ave.
Detroit 17, Mich.—10335 Flora St.
Kansas City 10, Mo.—6175 Pasco
Los Angeles 21, Calif.—1350 Produce St.
Milwaukee 46, Wis.—2040 W. Wisconsin
New York 7, N. Y.—100 Church St.
Philadelphia 23, Pa.—939 N. Delaware Ave.
Portland, Ore.—105 S. E. 10th St.
St. Louis 2, Mo.—820 Gratiot Ave.
Salt Lake City, Utah—302 Rio Grande St.
Seattle 4, Wash.—1201 4th Ave., South
Wadsworth, Ohio—S. Main St.

MOTT CORPORATION
590 Shawmut Ave., LaGrange, Ill.—P. O. Box 28, Brookfield, Ill.
**See ad page 52.

Distributors:

Birmingham, Mich.—W. F. Miller Garden & Lawn Equip., 1983 S. Woodward Ave.
Burlington, Ont., Canada—Duke Lawn Equip., Ltd., 1184 Plains Rd. E.
Dallas 7, Tex.—The Southern Plow Co., 1202 N. Industrial Blvd.
Dublin, Georgia—Lovett & Tharpe Howe., 201 W. Jackson St.
Indianapolis 4, Ind.—C. E. Grieser Co., Inc., 43 S. Delaware St.
Memphis 8, Tenn.—King Sales Co., Inc., 1284 Channel Ave.
New York 17, N. Y.—Lehon Equip. Co., Inc., 60 E. 42nd St.
Osage Beach, Mo.—Gamble Distributing Co., U. S. Hwy. 54 at Hwy. 42
San Mateo, Calif.—Bob Randick Co., 176 South Blvd.
Seattle 4, Wash.—Ed Short Co., 2400 6th Ave., S.
S. San Gabriel, Calif.—Warsco Equip. Co., 6738 E. Garvey
Youngstown, Ohio—Burton Supply Co., Inc., 1301 Logan Ave.

MUCKLE MANUFACTURING CO.
Owatonna, Minnesota

MULTI-CLEAN PRODUCTS, INC.
2277 Ford Parkway, St. Paul 16, Minn.

Representatives:

Amarillo, Tex.—Kelly B. Smith, P. O. Box 2734, 1910 Rogers St.
Buffalo 19, N. Y.—James T. Kildorf, 232 White Ave.
Cedar Rapids, Ia.—Tom Hanson, 409 First St. S. E.
Cleveland 29, Ohio—Theo. J. Heisler, 6802 Bauerdale Dr.
Corona, Calif.—H. C. Gilbertson, 1022 Beverly Rd.
Easton, Conn.—C. J. Tyler, 31 Chestar Rd.
Fargo, N. D.—John R. Evanson, 710 10th St. S.
Garden City, Mich.—James E. Andrist, 7658 Torri Drive
Jacksonville 11, Fla.—Harry Falls, 6337 Stetler Dr.
Millbae, Calif.—J. W. Johnson, 197 Poplar Ave.
Minneapolis 24, Minn.—Donald L. Budolfson, 4904 Aspasia Lane
Minneapolis 23, Minn.—Richard H. Norris, 6331 Humboldt Ave. S.
Norristown, Pa.—W. L. Sloan, 889 Parkwood Rd., R. D. #3
Palestine, Tex.—Louis Farris, Jr., 605 Lakeshore Dr.
Victoria, Tex.—Grady G. Polk, 706 Fern Lane
Westchester, Ill.—Donald A. Hyde, 1612 Manchester

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Safety Products Sources

Distributors:

Aberdeen, Wash. –Antich Supply Co.
Aberdeen, S. D. –Dakota Chemical Co.
Albany, Ga. –S & S Co.
Albany, N. Y. –Atsco Prod.
Albany, N. Y. –J & L Paper Prod., Inc.
Albany, N. Y. –Morwhite Chemical Co., Inc.
Albuquerque, N. M. –Green's San. Specialties
Alhambra, Calif. –Lombardo Terrazzo Supply
Alexandria, S. D. –Montgomery's
Amarillo, Tex. –Roberts Paper Co.
Anaheim, Calif. –Snell San. Supply Co.
Anderson, Ind. –Duo Sanitary Supply Co.
Anderson, Ind. –Floor Store Jan. Supp. Co.
Asheville, N. C. –Standard Paper Sales Co.
Atlanta, Ga. –Floors, Inc.
Atlanta, Ga. –Guardian Chemical Co.
Atlantic City, N. J. –Ojserkis & Son
Augusta, Ga. –Kamo Mfg. Co.
Aurora, Ill. –Shorr Paper Prod.
Austin, Tex. –Austin Chemical Co.
Austin, Minn. –Carpetone Service
Bakersfield, Calif. –Odorite San. Serv. Co.
Baltimore, Md. –Sterling Chemical Co.
Baton Rouge, La. –Louisiana Paper Co.
Battle Creek, Mich. –Clean Sweep Supp. Co.
Bay City, Mich. –Dobson Corp.
Bellaire, Ohio–Morlan Chemical Co.
Bethesda, Md. –J. Milton Baker Co.
Billings, Mont. –K-B Chemical Co.
Binghamton, N. Y. –Crandall Supply Co.
Birmingham, Ala. –Ebsco Industries, Inc.
Boston, Mass. –James Bliss & Co.
Bowling Green, Ky. –B. G. Chemicals
Bradley Beach, N. J. –South Shore Paper Co.
Bronx, N. Y. –Hunter Paper Co.
Buffalo, N. Y. –Advance Sanitation, Inc.
Burbank, Calif. –Valley Paper & Chem. Co.
Burlingame, Calif. –California Mill Equip. Co.
Cambridge, Mass. –Chemical Research of America
Camden, N. J. –Keane Products Co.
Canton, Ohio–Freco Chemical Co.
Cape Girardeau, Mo. –Obemiller Floor & Supply Co.
Cedar Rapids, Iowa–Lift Prod. Inc.
Champaign, Ill. –Illini Chemical Co.
Charlotte, N. C. –S. H. Duncan & Co.
Charlotte, N. C. –F. H. Ross & Co., Inc.
Chattanooga, Tenn. –Southern Prod. Co., Inc.
Chicago, Ill. –Inlander-Steindler Paper
Chicago, Ill. –Lien Chemical Co.
Chicago, Ill. –Carl H. Ruether
Chickasha, Okla. –Boren-Malone Co.
Chillicothe, Mo. –B. R. Harris & Co.
Cincinnati, Ohio–Nat'l Maint. Materials
Cleveland, Ohio–Ball Chemical Co.
Cleveland, Ohio–Government Chemical Prod. Corp.
Cleveland, Ohio–Lindsey Sanitation Co.
Columbia, Mo. –Stover Carpet Co.
Columbia, S. C. –Niggel Bros.
Columbus, Ohio–City Maintenance Supply Co.
Corpus Christi, Tex. –Corpus Christi Paper Co.
Corpus Christi, Tex. –Waldrep Jan. Supp. & Serv.
Dallas, Tex. –A-1 Supply Co.
Dallas, Tex. –B & L Supply Co.
Dallas, Tex. –Kelton Co.
Dallas, Tex. –Republic Chemical Co.
Danville, Ill. –Shick Supply & Equip.
Dayton, Ohio–Ace Janitor Supply, Inc.
Dayton, Ohio–Mid States Supplies, Inc.
Decatur, Ill. –Jan San Supply Co.
Denver, Colo. –Acme Sanitary Supply Co.
Denver, Colo. –American San. Prod. Co.
Des Moines, Iowa–Des Moines Sanitary Supply
Detroit, Mich. –Arrow Maintenance Supply
Detroit, Mich. –Convenient Sales
Detroit, Mich. –Chas. P. Rabaut & Assoc.
Detroit, Mich. –Sheldon Janitor Supply Co.
Detroit, Mich. –Vacuum Cleaner Ser. Co.
Dollar Bay, Mich. –Thurston W. Helman
Dubuque, Iowa–Higley Chemical Co.
Duluth, Minn. –Willis Supply
Durham, N. H. –Craig Supply Co., Inc.
Easton, Pa. –Certified Chemical Co.
Eau Claire, Wis. –Betz Sanitary Supply Co.
Eau Claire, Wis. –Eau Claire Book & Statny.
El Centro, Calif. –Scheniman Paper Co.
Elm Grove, Wis. –Flor-Nu, Inc.
Elmhurst, Ill. –Ed Bade & Son
Elmont, N. Y. –Halbro Co.
El Paso, Tex. –Regal Janitor Supply Co.
Emeryville, Calif. –Diamond Jan. & Supply Co.
Erie, Pa. –Perma-Kleen Dist.
Estherville, Iowa–Herb-Lar Industries
Eureka, Calif. –Robinson Supply Co.
Evansville, Ind. –Pro-Tex-All Co.
Fargo, N. D. –Dacotah Paper Co.
Farrell, Pa. –Nathan Brothers
Fayetteville, Ark. –B & C Davis Supply
Fort Dodge, Iowa–Don Bocken Supply Co.
Fort Lauderdale, Fla. –W. P. Hartman
Fort Lauderdale, Fla. –Melrose Chem. Co.
Ft. Myers, Fla. –Dumont Paper Products
Fort Smith, Ark. –Acme Jan. & Chem. Supply
Fort Wayne, Ind. –Midwest Chemical Co.
Fort Worth, Tex. –Forrester Sales & Service Co.
Fort Worth, Tex. –Fort Worth Jan. Supp.
Frankfort, N. Y. –Marshall Chem. & Supp. Co.
Frederick, Md. –Fischer, Lang & Co.
Gainesville, Fla. –Florida Chemical Industries, Inc.
Galena, Ill. –Clarence Wearmouth
Galveston, Tex. –Hygiea Chemical Co.
Garden Grove, Calif. –Advance Cleaning Equip. Co.
Glendale, Calif. –Chem-Care Products, Inc.
Grand Forks, N. D. –Grand Forks Glass & Pnt.
Grand Island, Nebr. –Hayes Hardware, Inc.
Great Falls, Mont. –Houseman & Co.
Green Bay, Wis. –Wright Supply Co.
Greenwood, Miss. –Parham & Son Supply
Grove, Okla. –Tipton Book & Supply Co.
Hammond, Ind. –Inlander-Steindler Paper Co.
Harrisburg, Pa. –Roberts-Weck, Inc.
Hattiesburg, Miss. –Delco Chemical Co.
Hays, Kan. –Western School Supply
Hibbing, Minn. –Bedard Prod. Co.
Houston, Tex. –Jim Turner Co.
Huntsville, Ala. –Banks Paper & Supply Co.
Hyannis, Mass. –Hubbard Paint Co.
Indianapolis, Ind. –Correlated Supply Co., Inc.
Indianapolis, Ind. –Hartman Supply Co.
Indianapolis, Ind. –Kiger H Co., Inc.
Indio, Calif. –Scheniman Paper Co. of Indio
Jackson, Miss. –Sanitary Supply Co. of Miss., Inc.
Jacksonville, Fla. –Atlantic Bag & Paper
Jacksonville, Fla. –Davis & Son Floors
Jacksonville, Fla. –Jax Tool & Equip. Co.
Jacksonville, Fla. –Morris & Eckels
Johnstown, Pa. –Kuhns & Young
Joplin, Mo. –Joplin Janitor Supply Co.
Kalamazoo, Mich. –Kalamazoo San. Supply Co.
Kansas City, Mo. –Edward Livingston & Sons
Knoxville, Tenn. –Scruggs, Inc.
LaCrosse, Wis. –Sanitary Supply Co.
Lafayette, La. –Hub City Paper Co.
Lawton, Okla. –Southwest Chemical Co.
Lewistown, Pa. –Henry Janitor Supply
Lima, Ohio–Brown Supply Co.
Lincoln, Neb. –H. D. Mason Co.
Little Rock, Ark. –Arkansas Paper Co.
Long Beach, Calif. –Southland Janitor Supply Co.
Los Angeles, Calif. –Argus Sanitary Supply
Los Angeles, Calif. –Gale Supply Co.
Los Angeles, Calif. –Victor Kemp Co.
Los Angeles, Calif. –Joe Lauring Enterprise
Los Angeles, Calif. –Maintenance Equip. Sales
Los Angeles, Calif. –Pierose Bldg. Maint. Co., Inc.
Los Angeles, Calif. –A. B. Rice Co.
Louisville, Ky. –Chemco Co.
Louisville, Ky. –Louisville Janitor Supply Co.
Madison, Fla. –Madison Supply Co.
Madison, Wis. –W. H. Gadow
Madison, Wis. –O'Keefe Soap & Supply Co.
Manchester, N. H. –Interstate Restaurant Equip. Co.
Manhattan, Kan. –Cary Co.
Mansfield, Ohio–Ohio Janitor Supply Co.
Maplewood, N. J. –John Beattie Co.
Marquette, Mich. –Upper Peninsula Off. Supp.
Memphis, Tenn. –Dixie Disinfectant Co.
Miami, Fla. –Allen Chemical Co.
Midland, Mich. –Midland Paper Co.
Midland, Tex. –Craver-Hicks Co.
Milwaukee, Wis. –Ace Window Cleaning Co.
Milwaukee, Wis. –Shannon Floor Co.
Minneapolis, Minn. –H. E. Seleen Co.
Mitchell, S. D. –Automotive Supply Co.
Mobile, Ala. –Paper Prod. Co. of Mobile
Mobridge, S. D. –Brown Motor Supply Co.
Modesto, Calif. –Modesto Paper Co.
Monroe, La. –Louisiana Papee Co.
Monroeville, Ala. –Central Supply Co.
Moorhead, Minn. –C. A. Halmrast
Muncie, Ind. –Ace Janitor Supply Co.
Muskegon, Mich. –Steindler Paper Co.
Nashville, Tenn. –Nashville Distr. Co.
New London, Wis. –O'Neil Supply Co.
New Orleans, La. –Columbia Paper Co.
New York, N. Y. –Cleanwell Materials Inc.
Newton, N. C. –Cecil H. Jarrett
Norfolk, Va. –Chem. Research Prod. Co.
Norristown, Pa. –Zimmerman Paper & Supp.
North Sacramento, Calif. –Johnson Dist. Co.
Oakland, Calif. –Pacific Flooring Supply
Oklahoma City, Okla. –Oklahoma Paper Co.
Olney, Ill. –Benson Chemical Prod.
Omaha, Neb. –Fadden Supply Co.
Omaha, Neb. –Saxe-Freeman Co.
Owensboro, Ky. –Cox Paper Co.
Paris, Tex. –Guest Paper Co.
Peoria, Ill. –Vonachen Industrial Supplies, Inc.
Perth Amboy, N. J. –W. J. Patten Co.
Philadelphia, Pa. –Accommodation Sanitary Supply Co., Inc.
Philadelphia, Pa. –Galer & Hults, Inc.
Philadelphia, Pa. –Keystone Wiper & Supp.
Phoenix, Ariz. –Western Janitor Supply Co.
Pittsburgh, Pa. –Gateway Maintenance Supp.
Pocatello, Idaho–Varsity House Cleaners & Sup. Co.
Pomona, Calif. –Pomona Brush & Chem. Co.
Portland, Me. –Sani-Clean Dist.
Portland, Ore. –Stegner & Co.
Poughkeepsie, N. Y. –Sanitor Supplies Inc.
Providence, R. I. –Richmond Sales Co.
Raleigh, N. C. –James H. Anderson Co.
Rapid City, S. D. –Black Hills Chem. Co.
Rapid City, S. D. –Bolduc-Rivkin Inc.
Redding, Calif. –McInroe Supply Co.
Reno, Nev. –Inland Chemical & Supply Co.
Richmond, Va. –Virginia-Carolina Ladv. Supp.
Rochester, Minn. –Arnold's Supply Co.
Rochester, N. Y. –Douglas Prod. Sales Corp.
Rochester, N. Y. –Kolko Paper Co.
Rochester, N. Y. –Rochester San. Prod.
Rockford, Ill. –Rock River Chemical, Inc.
Rolla, Mo. –Simmons Janitor Supp. Serv.
Roswell, N. M. –Roswell Trading Co., Inc.
Rutland, Vt. –United Chemical Co., Inc.
St. Louis, Mo. –City Janitor Supply Inc.
St. Louis, Mo. –Freesmeier Laboratories
St. Louis, Mo. –The Huge Co.
St. Paul, Minn. –Brissman-Kennedy, Inc.
St. Paul, Minn. –Sanitary Products Co.
Salt Lake City, Utah–Harrison Bros. Janitorial Supply Co.
Salt Lake City, Utah–Wasatch Chem. Co.
San Antonio, Tex. –Bexar Chemical Co.
San Antonio, Tex. –Hunter Co.
San Bernardino, Calif. –Wright Supply Co.
San Diego, Calif. –Mission Chemical Co.
San Francisco, Calif. –Crest Sales
San Francisco, Calif. –Western Chemical Co.
San Jose, Calif. –Santa Clara Supply Co.
San Mateo, Calif. –K-H Supply Inc.
Santa Ana, Calif. –Blower Paper Co.
Santa Clara, Calif. –Kallman Co.
Saranac Lake, N. Y. –AB Floor Maint. & Supp.
Sauk Centre, Minn. –Walter E. Benson
Savannah, Ga. –Shannon Industries
Scranton, Pa. –Megargee Bros. Inc.
Seattle, Wash. –Janco Supply Co.
Shreveport, La. –Louisiana Paper Co.
South Charleston, W. Va. –Crown Supply Co.
Sparta, Wis. –Sparta Brush Co., Inc.
Spokane, Wash. –Superior Sales & Distr. Co.
Springfield, Ill. –Wolford-Morris Equip.
Springfield, Mass. –Richeo Products, Inc.
Springfield, Mo. –Ozark Paper & Jan. Supp.
Springfield, Ohio–Groves Restaurant Supp.
Staten Island, N. Y. –Richmond Supply Co.
Sturgis, Mich. –Cardinal Chemical Co.
Superior, Wis. –Dunbar Supply Co.
Superior, Wis. –Pearson Industrial Supply
Syracuse, N. Y. –Parish Maintenance Supply Corp.
Tacoma, Wash. –Murtough Supply Co.
Tampa, Fla. –Rex Mfg. Co.
Tampa, Fla. –West Coast Equip. & Sup. Co.
Terre Haute, Ind. –Sentinel Supply Co.
Toledo, Ohio–Sliger-Betz Chemical Co.
Trenton, N. J. –John W. Stone
Tulsa, Okla. –Harvard Janitor Supply
Tulsa, Okla. –Marshall Supply & Equip. Co.
Tulsa, Okla. –Moulder-Oldham Co., Inc.
Tulsa, Okla. –Oklahoma Janitor Supply Co.
Tyler, Tex. –Etex Paper Co.
Utica, N. Y. –Monarch Chemicals Inc.
Vallejo, Calif. –Martin Dist. Co.
Visalia, Calif. –Caskey Paper Co.
Waco, Tex. –Waco Chemical & Supply Co.
Washington, D. C. –Joseph Guss & Sons, Inc.
Washington, D. C. –Shamrock Paper Co.
Waterloo, Iowa–Janitor Supplies, Inc.
Wausau, Wis. –Wausau Office Service Co.
Waukesha, Wis. –Palmer Co.
Waycross, Ga. –Sanico Div. Sporting Goods, Inc.
West Frankfort, Ill. –Certi-Clean Floor Co.
West Haven, Conn. –Sanitary Products Corp.
West Townsend, Mass. –Tri-State Supp. Co.
West Warwick, R. I. –Phenix Supply Co.
Westbrook, Minn. –Budolfson Supply Co.
Westfield, N. J. –Norton & Williams, Inc.
Wheeling, W. Va. –Greschner Service & Supply Co.
White Plains, N. Y. –Halbro Westchester
Whittier, Calif. –Arrow Kleen Prod., Inc.
Wichita Falls, Tex. –Empire Paper Co.
Wichita, Kan. –Wichita Brush & Chem. Co.
Wildwood, N. J. –Paramount San. Chem. Co.
Wilkes-Barre, Pa. –Master Chemical Prod.
Wilmington, Del. –Diamond Chem. & Supply
Wilmington, Del. –Sterling Soap & Chem. Co.
Wisconsin Rapids, Wis. –Rapids Sanitation Supply
Worcester, Mass. –Abbot Cleaning Supp. Co.
Worcester, Mass. –J. E. Harris
Ycungstown, Ohio–Rhiel Supply Co.

MULTIFINISH MFG. CO.
Magnetool Division
1447 E. Eight Mile Rd., Hazel Park, Michigan

Distributors:

Barre, Vt. –Smith Whitcome & Cook Co., 442 N. Main St.
Chicago, Ill. –McMaster-Carr Supply Co., 640 W. Lake St.
Detroit, Mich. –Allied Research Products Inc., 400 Midland Ave.
Detroit, Mich. –F. B. Stevens, Inc., 1800 Eighteenth
East Orange, N. J. –Kehoe Specialty Distributors, 20 Vernon Place
Los Angeles, Calif. –C. W. Warren Co., 646 N. Fuller Ave.
Los Angeles, Calif. –F. W. Shrader Co., 11623 S. Broadway
Tarentum, Pa. –Elmer Pfeiffer, 103 Fifth Ave.

MUTER COMPANY, THE
1255 S. Michigan Ave., Chicago 5, Ill.

Distributors:

Albany 7, N. Y. –Ressus Sporting Goods Co., 66 Beaver St.
Annapolis, Md. –Fawcett Boat Supplies, Inc., 100 Compromise St.
Atlantic City, N. J. –Spencer Gifts, Inc., 1601 Albany Ave. Blvd.
Atlanta 3, Ga. –Southern Sporting Goods, 127 Ellis St., N. E.
Bay City, Mich. –Meisel Hardware & Supply Co., 1010-12 N. Water St.
Berkeley 10, Calif. –Cutter Laboratories, 808 Parker St.
Binghamton, N. Y. –Modern Marine Nart, Inc., 307 Water St.
Boston 10, Mass. –James Bliss & Co., Inc., 242 Atlantic Ave.
Boston, Mass. –Harry Miller Co., 244 Atlantic Ave.
Boston, Mass. –Marine Hardware & Supply Co., 390 Atlantic Ave.
Brainard, Minn. –Sport Supply Co.
Brooklyn 13, N. Y. –Hygrade Cutlery Co., 268 Brooklyn Ave.
Buffalo 3, N. Y. –H. L. Peters Inc., 671 Main St.
Burlingame, Calif. –Adolph Blaich, 1800 Rollins Rd.
Burlington, Vt. –Riverside Wholesale Distributors, 101 Main St.
Camden, N. J. –M & E Marine Supply Co., P. O. Box 601
Chicago 8, Ill. –Ace Hardware Corp., 2355 S. Blue Island Ave.
Chicago 38, Ill. –Air Associates Div., 5315 W. 63rd St.
Chicago 50, Ill. –Chicago Sporting Goods Co., 4632 W. 21st Pl.
Chicago 7, Ill. –Co-op Electric Supply Co., 812 W. Jackson Blvd.
Chicago 10, Ill. –Faber Brothers, Inc., 350 W. Ontario St.
Chicago 24, Ill. –Kleins Sporting Goods, Inc., 4540 W. Madison
Chicago 10, Ill. –Remco, La Salle at Ohio
Chicago 38, Ill. –U. A. S. Corp., 5637-43 W. 63rd St.
Chicago 38, Ill. –Van Dusen Aircraft Supplies, 5040 W. 55th St.
Chicago 2, Ill. –Von Lengerke & Antoine, 9 N. Wabash Ave.
Dallas 35, Tex. –M & B Sales Co., Inc., 2615 Love Field Dr.
Dallas, Tex. –Van Dusen Aircraft Supplies, Southwest Div., Inc., 2915 Burbank St. –Love Field
Denver 2, Colo. –Dave Cook Sporting Goods Co., Inc., 1601 Larimer
Detroit, Mich. –General Supply Corp., Detroit City Airport
Duluth 2, Minn. –Tri-State Distributing Co., 207 W. Michigan Ave.
Duluth, Mich. –Twin Ports Sales Co., 17 226 Lake Ave. S.
Egg Harbor City, N. J. –General Marine Supply Co., 339-41 Boston Ave.
Ely, Minn. –Fisherman's Headquarters, 209-211 E. Sheridan
Fairbault, Minn. –Gopher Shooter's Supply, Box 246
Flint 4, Mich. –I & B Distributors, 1706 DuPont St.
Freeport, L. I., N. Y. –Freeport Marine Supply, 51 W. Merrick Rd.
Fresno, Calif. –Blackstone-Hedges, 1717 Hedges
Fresno 6, Calif. –Foster & Co., 946 Fresno Ave.
Grand Junction, Colo. –Vorbeck Sporting Goods, 406 Colorado Ave.

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Glendale, Calif.—Air Associates, Inc., 1231 Airway
Hartford 14, Conn.—Bernard E. Gittin Co., Inc., 167-171 Maple Ave.
Honolulu, Hawaii—Toys for Men Ltd., 1226 S. Beretania St.
Houston, Texas—J. S. Oshman Co., 2219 McKinney St.
Houston 1, Tex.—W. A. Holt Co., Inc., 1017 Fannen at Lamar
Howard City, Mich.—Lee E. Olsen Knife Co.
Idaho Falls, Idaho—Fanning Wholesale Co., Box 248 Market St. & Yellowstone
Kansas City 6, Mo.—Gateway Wholesale Sporting Goods Co., 1321 Main St.
Larchmont, N. Y.—W & J Tiebout Inc., #1 Post Rd.
Los Angeles 15, Calif.—Coast Tackle & Sparts Co., 1327 W. 112th Pl.
Los Angeles, Calif.—Hoffman Hardware Co., 6625 E. Washington Blvd.
Los Angeles, Calif.—Southern Marine Supply, 1140 S. Hope St.
Manchester, Vt.—Charles F. Orvis Company, Inc.
Medina, N. Y.—Surelock Clamp Corporation, 804 Gwinn St.
Miami, Fla.—Hopkins-Carter Hardware Co., 139 S. Miami Ave.
Miami 36, Fla.—The Florida Frogmen, Div. Oceanic Research Div. Corp., 7302 S. Dixie Hwy.
Miami, Fla.—Underwater Sports, Inc., 2219 Biscayne Blvd.
Minneapolis, Minn.—Peck Brothers, 6801 Lyndale Ave., S.
Minneapolis, Minn.—Van Dusen Aircraft Supplies, 2801 E. 78th St.
Minneapolis 8, Minn.—World Wide, Inc., 1422 W. Lake St.
New Brunswick, N. J.—Drier Co., 307-309 Seaman St.
New Orleans 16, La.—Arthur Duvic's Sons, 122 Charters St.
New Orleans, La.—Fishers Inc., 200-204 St. Peters St.
New Orleans 4, La.—Maritrop Trading Corp., 321 St. Charles St.
New Orleans, La.—Roland's, 520 N. Rampart St.
New Orleans, La.—United Fruit Co., 321 St. Charles St.
New York 13, N. Y.—Commodore Uniform Co., Inc., 349 Broadway
New York 4, N. Y.—Durkee Co., 29-30 South St.
New York 10, N. Y.—Herman Sukon Co., Inc., 915 Broadway
New York 16, N. Y.—The Crows-Nest, 16 E. 40th St.
New York, N. Y.—Vanderburgh & Co., 11 Broadway
Nyak, N. Y.—Rockland Fire Equipment, 13 S. Broadway
Park Rapids, Minn.—Fuller's Wholesale Tackle Co.
Parkville 14, Md.—Eastern Scuba Supply Ltd., 8105 Harford Rd.
Philadelphia 5, Pa.—Edward K. Tryon Co., 815 Arch St.
Philadelphia 6, Pa.—Elisha Webb & Co., 136 S. Front St.
Philadelphia 6, Pa.—Polly Brothers Inc., 634 Market St.
Pittsburgh, Pa.—Oscar Robbins & Co., 1004 Fifth Ave.
Pompano Beach, Fla.—Kurlee Enterprises, 1810 Northeast 25th St.
Providence, R. I.—Frepak Products, 380 N. Main St.
Queens, N. Y.—W. S. Wilson Corp., P. O. Box 218, Sunnyside Sta.
Reading, Pa.—Kagan's Inc., 641 Penn St.
Saginaw, Mich.—Morley Brothers, Dept. 16
St. Paul, Minn.—Gokey Co., 94 E. 4th St.
St. Paul 4, Minn.—The Kennoc Co., 547 N. Wheeler St.
San Antonio 4, Texas—Perry Shankle Co., 1801 S. Flores St.
San Antonio, Tex.—The Tackle Box, 103 W. Martin St.
San Diego 1, Calif.—Nuttall-Styris Co., 825 Columbia St.
San Diego 1, Calif.—Stanley Andrews Sport Goods Inc., 1144 Third
San Francisco, Calif.—Allied Sales, 725 Market St.
San Francisco 5, Calif.—Pacific Outdoor Sales Co. Inc., 743 Mission St.
San Francisco, Calif.—B. H. Hebgan Co., 237 First St.
San Francisco, Calif.—Weeks-Howe-Emerson Co., 645 Howard St.
Seattle 1, Wash.—Pacific Marine Supply Co., 1223 Western Ave.
Seattle, Wash.—Rainer Sales Co., 1122 Pine St.
Seattle, Wash.—Schwabacker Hardware Co., 401 First Ave. S.
Seattle 24, Wash.—Seattle Hardware Co., 501 First Ave. S.
Seattle 1, Wash.—Seattle Marine & Fishing Supply, Foot of Pike St., Pier 59
Seattle 8, Wash.—Washington Aircraft & Transport, Boeing Field
Syracuse, N. Y.—T-High Sport Equipment Co., 113 N. Warren St.
Tacoma, Wash.—Hunt & Mottell Co., P. O. Box 1639
Tacoma 1, Wash.—Washington Hardware Co., P. O. Box 1437
Tampa 4, Fla.—Gillette Tackle Co., 8405 N. Edison
Teterboro, N. J.—Van Dusen Aircraft Supplies, Teterboro Air Terminal
Toledo, Ohio—Bostwick Braum Co., Cor. Summit & Montrose Sts.
Toledo, Ohio—Netcraft Co., 3101 Sylvania St.
Urbana, Ill.—Sports Equipment Corp., 309 E. University Ave.
Waseca, Minn.—Herter's Inc., R. R. #1
Washington 24, D. C.—Washington Marina, 1300 Marine Ave 5 W
Watertown, N. Y.—Seaway Sport Shop, Inc., 529-535 W. Main St.
West Palm Beach, Fla.—Palm Beach Skin Divers Supply
Westport, Conn.—Kellogg Marine, Inc., 139 E. State St.
Wofford Heights, Calif.—Ruth Valdez, Box 43

NATIONAL CHEMSEARCH CORP.
2417 Commerce, Dallas 26, Texas

Branch Offices:

New York, N. Y.—33 W. 42nd St.
St. Louis Mo.—906 S. 7th St.

NATIONAL CYLINDER GAS CORP.
840 N. Michigan Ave., Chicago 11, Ill.
**See ad page 134.

NATIONAL FOAM SYSTEM, INC.
Union & Adams Sts., West Chester, Pennsylvania
**See ad page 235.

Branch Offices:

New York 17, N. Y.—Rm. 503, 141 E. 44th St.

Distributors:

Beaumont, Tex.—Arthur Dooley & Son, Inc., 1650 Brockman St.
Birmingham 6, Ala.—Associated Engineers, Box 3008 Avondale Sta.
Buffalo 25, N. Y.—Fire Equipment Sales Co., 4223 Genesee St.
Cambridge 42, Mass.—Fire Equip., Inc., 82 Broadway
Charleston 2, W. Va.—Property Protection Co., 422 Washington St. W.
Chicago 4, Ill.—Hayden & Co., 53 W. Jackson Blvd.
Cleveland 11, Ohio—Mr. William H. McGunagle, 3694 Melbourne Ave.
Detroit 2, Mich.—Agren-Ascher Co., 5-121 General Motors Bldg.
Fort Lauderdale, Fla.—Mr. H. C. R. Folmer, 2506 Sea Island Dr.
Indianapolis 1, Ind.—The Safety Corp., 3722 E. Michigan St.
Los Angeles 13, Calif.—Western Fire Protection, Inc., 611 E. Third St.
Pittsburgh 34, Pa.—Mr. J. R. Edwards, 300 Mt. Lebanon Blvd.
Portland 4, Ore.—Wilco Fire Equip. Co., 1123 S. E. Market St.
St. Louis 1, Mo.—Alber Fire Protection Co., 211 N. Seventh St.
St. Paul 4, Minn.—Weber & Troseth Co., 1567 University Ave.
Salt Lake City 10, Utah—Universal Safety & Fire Equip. Co., 727 S. W. Temple
San Francisco, Calif.—Western Fire Protection, Inc., 785 Market St.
Seattle, Washington—Wilco Fire Equip. Co., 4427 Wallingford
Tulsa 3, Okla.—A & A Fire Protection Co., 909 N. Main

Toronto, Ont., Canada—The Doyle Protequip Co., 36 Chauncey Ave.
Vancouver, B. C., Canada—Silver Line Fire Equip. Co., 720 Alexander St.

NATIONAL MINE SERVICE CO.
2530 Koppers Bldg., Pittsburgh 19, Pa.

Branch Offices:

Beckley, W. Va.—P. O. Box 32
Birmingham 16, Ala.—P. O. Box 20179
Indiana, Pa.—P. O. Box 610
Jenkins, Ky.—P. O. Box 872
Logan, W. Va.—P. O. Box 1671
Madisonville, Ky.—P. O. Box 409
Morgantown, W. Va.—P. O. Box 2128
Mt. Carmel, Pa.—Seventh and Maple Sts.
Price, Utah—P. O. Box 369

NEWCO MFG. CO., INC.
P. O. Box 5939, 3636 Main St., Kansas City 11, Mo.

NEW JERSEY SAFETY EQUIPMENT CO.
299 Park Ave., East Orange, N. J.
**See ad page 185.

NICHOLS ENGINEERING COMPANY, THE
3416 W. Grand, Chicago 51, Illinois

NIELSEN, E. V., INC.
575 Hope St., Stamford, Conn.

Distributors:

Akron, Ohio—Acme Safety Products Co., 387 Storer Ave.
Bridgeport 1, Conn.—Bridgeport Industrial Products, Inc., 22 Cross St.
Buffalo 20, N. Y.—Steinwachs' Safety Supply, 1573 S. Park Ave.
Cambridge 42, Mass.—Greene Rubber Co., Broadway at 6th St.
Chicago 39, Ill.—Daniels Supply & Tool Co., 4447-9 W. Fullerton Ave.
Columbus, Ga.—Columbus Iron Works
Edgewood, R. I.—F. A. Spargo Co., P. O. Box 2121
Elizabeth, N. J.—Industrial Rubber Co., 940 S. Elmora Ave.
Hamilton, Ont., Canada—Higginson Equip. Sales, Ltd., P. O. Box 23
Jersey City 2, N. J.—Service Specialties, Inc., 205 Fifteenth St.
Kalamazoo, Mich.—Safety Services, Inc., 1903 W. Main St.
Lancaster, Pa.—M-M-A, Inc., Coho Bldg., P. O. Box 411
Lexington, N. C.—Furniture Makers Supply Co., P. O. Box 407
Los Angeles 3, Calif.—Guardian Safety Equip. Co., 7223 S. Main St.
Louisville 3, Ky.—A-1 Safety Supply Co., 314 E. Jacob St.
Manchester, Conn.—T. E. Wilke Associates, 340 Porter St.
Milltown, N. J.—Ideal Industrial Supplies, 132 Van Liew Ave.
Milwaukee 8, Wis.—Alexander F. Braun, 2912 W. Wells St.
Minneapolis 4, Minn.—Duncan Co., 1300 S. Fourth St.
New Haven, Conn.—E. L. Barker Co., 258 Church St.
Newark 4, N. J.—Safeguard Industrial Equip. Co., 271 Verona Ave.
Oakland 11, Calif.—L. N. Curtis & Sons, 4133 Broadway
Philadelphia, Pa.—Guardian Safety Equipment Co., 214-16 S. 49th St.
Pittsburgh, Pa.—Mine Safety Appliances, 201 N. Braddock St.
Rahway, N. J.—Rahway Hardware Co., 1361 Main St.
San Jose 12, Calif.—Calif. Safety & Supply Co., 946 N. 4th St.
Sausalito, Calif.—E. D. Bullard Co., 2680 Bridgeway
Tulsa 19, Okla.—Guardian Safety Equip. Co., 1742 S. Main St.
Worcester, Mass.—Woodis Industrial Corp., 747 W. Boylston St.

NOISE CONTROL
335 E. 45th St., New York 17, N. Y.

NOLAN COMPANY, THE
Bowerston 15, Ohio

NORMAN INDUSTRIES, INC.
614 Diversey Parkway, Chicago 14, Illinois

NORTON COMPANY
1 New Bond Street, Worcester 6, Massachusetts

Branch Offices:

Chamblee, Ga.—5200 Peachtree Road
Chicago 32, Ill.—4737 S. Christiana Ave.
Cleveland 3, Ohio—1306 East 55th Street
Detroit 8, Mich.—5805 Lincoln Avenue
Glenshaw, Pa.—1130 Butler Plank Road
Huntington Park, Calif.—5905 Pacific Blvd.
Indianapolis 2, Ind.—1301 West 16th Street
Philadelphia 44, Pa.—4732 Stenton Avenue
St. Louis 16, Mo.—4085 Bingham Avenue
Teterboro, N. J.—Green and North Streets
West Hartford 17, Conn.—10 Crossroads Plaza, Bishops Corner

Distributors:

Abilene, Tex.—C. C. Building Supply Co.
Alhambra, Calif.—Louis Lombardo
Alhambra, Calif.—Terrazzo Supply Co.
Amarillo, Tex.—Crowe-Guide Cement Co.
Atlanta, Ga.—F. Graham Williams Co.
Atlanta, Ga.—Klein & Co., Inc.
Atlanta, Ga.—The Truscon Laboratories
Baltimore, Md.—Pen-Mar Company, Inc.
Billings, Mont.—Casper Concrete Co.
Birmingham, Ala.—Kirkpatrick Sand & Cement Co.
Bonne Terre, Mo.—Bonne Terre Farming & Cattle Co.
Boston, Mass.—Waldo Brothers Company
Buffalo, N. Y.—The Master Builders
Cambridge, Mass.—B B Chemical Co.
Cambridge, Mass.—Refractory & Building Specialties
Cambridge, Mass.—William S. Simpson, Inc.
Canon City, Colo.—Colonna & Co. of Colorado, Inc.
Canton, Ohio—The Belden Brick Co.
Casper, Wyo.—Casper Concrete Co.
Chicago, Ill.—Lance Construction Supplies, Inc.
Chicago, Ill.—Mastercraft Art Marble Co.
Chicago, Ill.—Standard Mosaic Tile Co.
Chicago, Ill.—Terrazzo & Marble Supply Co.
McHenry, Ill.—Northbridge Marine Supply, Ann St.
Cleveland, Ohio—Master Builders Co.
Clifton, N. J.—Terrazzo & Marble Supply Co., Inc.
Coral Gables, Fla.—Walton Bldg. Products, Inc.
Dallas, Tex.—Macaloe, Inc.
Dayton, Ohio—The Dayton Builders Supply Co.
Denver, Colo.—Colorado Builders Supply Co.
Denver, Colo.—K. C. Construction Supply Co.
Detroit, Mich.—H. H. Dickinson Co.
Detroit, Mich.—Detroit Marble Co.
Detroit, Mich.—Devoe & Raynolds Co., Inc.
Duluth, Minn.—Duluth Builders Supply Co.
Fargo, N. D.—Victor H. Leeby Co.
Fort Lauderdale, Fla.—Tile & Terrazzo Distributors
Fort Wayne, Ind.—Old Fort Supply Co.
Fort Worth, Tex.—Fort Worth Sand & Gravel Co.
Fort Worth, Tex.—Tile Sales Co.
Fountain City, Tenn.—Crenshaws
Hartford, Conn.—American Mason Supply Co.
Hartford, Conn.—Jackson & Sagaline, Inc.
Hazel Park, Mich.—Williams Equipment & Supply
Hollywood, Fla.—Dela Corp.
Houston, Tex.—Ring Chemical Co.
Houston, Tex.—A. W. Bowles Co.
Indianapolis, Ind.—Spickelmier Co.
Joplin, Mo.—Joplin Cement Co.
Kansas City, Mo.—C. A. Brockett Cement Co.
Kansas City, Mo.—Kansas City Builders Supply Co., Inc.
Kansas City, Mo.—Kansas City Quarries Co.
Knoxville, Tenn.—Gray Knox Marble Co.
Liverpool, N. Y.—Thompson Materials-Syracuse, Inc.
Long Island, N. Y.—Colonna & Co.
Louisville, Ky.—American Builders Supply Co.
Lubbock, Tex.—Lubbock Building Products Co.
Maple Park, Ill.—George B. Smith Chemical Works, Inc.
Maspeth, N. Y.—L. I., N. Y.—National Terrazzo Supply
Melbourne, Fla.—East Coast Tile & Terrazzo Supplies, Inc.
Miami, Fla.—Miami Tile & Terrazzo Distributors, Inc.
Milwaukee, Wis.—Mid City Lumber & Supply Co.
Minneapolis, Minn.—Brock-White Co.
Nashville, Tenn.—T. L. Herbert & Sons
New London, Conn.—W. A. Plant Co., Inc.
New York, N. Y.—Carr Brothers Brothers, Inc.
New York, N. Y.—Eastern Terrazzo Supply Co., Inc.
New York, N. Y.—General Builders Supply Co.
New York, N. Y.—Kalman Floor Co.
New York, N. Y.—A. Lizzola Company, Inc.
New York, N. Y.—Zanin & Son, Inc.
Niagara Falls, N. Y.—The American Terrazzo Strip Co., Inc.
Omaha, Neb.—Western Brick & Supply
Philadelphia, Pa.—Veniete Processed Floor Co., Inc.
Philadelphia, Pa.—Vermarco Supply Co.
Phoenix, Ariz.—Baker-Thomas-Rooksey Wholesalers, Inc.
Portland, Oregon—Lutz Marble Co.
Portland, Oregon—Mannan Bldg. Supplies, Inc.
Proctor, Vt.—Vermont Marble Co.
Roanoke, Va.—C. Grady Cates, Inc.
St. Paul, Minn.—Durrazzo Products, Inc.
St. Paul—Minn.—North Central Supply Co.
St. Paul, Minn.—Northwest Terrazzo Service & Supply
Salt Lake City, Utah—Intermountain Concrete Spec., Co.
Salt Lake City, Utah—Vermarco Supply Co.
San Antonio, Tex.—Rufus A. Walker & Co.
San Francisco, Calif.—Vermarco Supply Co.
Seattle, Wash.—Pioneer Sand and Gravel Co.
Seattle, Wash.—Terrazzo & Stone Supply Co.
S. San Francisco, Calif.—Sonora Marble Aggregate Co.
Spokane, Wash.—Building Supplies, Inc.
Sugarcreek, Ohio—The Belden Brick Co.
Tampa, Fla.—W. Coast Equipment & Supply Co.
Toledo, Ohio—The Kuhlman Builders
Trenton, N. J.—Intepro, Inc.
Tulsa, Okla.—Independent Material Co.
Washington, D. C.—A. P. Woodson Co.
Worcester, Mass.—Kesselli & Morse Co.

NOTIFIER CORPORATION
3760 North 56th Street, Lincoln 4, Nebraska

Representatives:

Birmingham, Ala.—M. G. Gorrie & Assoc., Oxmoor Road
Birmingham, Mich.—Notifier of South East Michigan, 17360 Beverly Road
Des Moines, Iowa—Fire Detection Service of Iowa, 205 S. W. Thomton
Detroit, Mich.—O. H. Bell, Notifier District Office, 18256 W. McNichols
Hingham, Mass.—Notifier of New England, Hingham Industrial Center
Honolulu 12, Hawaii—John J. Harding, Ltd., 1514 Kona St.
Houston, Tex.—J. J. Garwood, 10 Leisure Lane
Minneapolis 15, Minn.—Edward H. Rouse, Inc., 529 South 7th St.
Ogden, Utah—Fire Protection Service, P. O. Box 175
Portland 2, Oregon—Adams Electric Co., 7980 S. E. 17th Ave.
San Diego, Calif.—F. H. Barth Co., 709 Bank of America Bldg.
San Francisco, Calif.—Notifier-Pacific, 55 Waterloo St.
Seattle, Wash.—Notifier-Northwest, 1050 N. 38th St.
Spenard, Alaska—Alaska General Alarms, Star Route 2
Wheat Ridge, Colo.—K. E. Flory, 6761 W. 37th St.

Distributors:

For Distributors and Dealers, see Yellow Pages in your telephone directory. Principal Cities, U. S. A.

NUCLEAR MEASUREMENTS CORP.
2460 N. Arlington Ave., Indianapolis 18, Ind.

Distributors:

Belleville, Ont., Canada—Canadian Nuclear Assoc., 398 Front St.
Cleveland Hgts., Ohio—G. P. Lael, 12417 Cedar Rd.
Dallas 26, Tex.—Hermann Assoc., 9562 Ash Creek Dr.
Denver, Colo.—Tod New, Uranium Corner, 2153 Broadway
Fairfax, Va.—Hildenbrand Co., P. O. Box 1060
Indianapolis, Ind.—David Oglesby, 2460 N. Arlington Ave.
Levittown, N. Y.—William H. Kramer, Box 164, 1 Fox Lane
Marblehead, Mass.—Nucleonic Distributors, 79 Clifton Ave.
New York City, N. Y.—Rocke International, 13 E. 40th St.
Palo Alto, Calif.—Hermann Assoc., Box 1179
Pasadena, Calif.—Hermann Assoc., 351 E. Walnut St.
Royal Oak, Mich.—Martin Vogt, 2817 Bamlet Rd.
St. Louis 22, Mo.—Atomasters Buntaine Corp., 111 W. Jewel Ave.

Continued on next page

Safety Products Sources

Westville Grove, N. J. –McDonald Sales Co., Delsea Dr.

NUPLA MFG. COMPANY
Division of New Plastic Corporation
1026 N. Sycamore Ave., Los Angeles 38, California

Distributors:

Distributors Located in Principal Cities

NUTTING TRUCK AND CASTER CO.
1201 W. Division St., Faribault, Minnesota

Distributors:

Albuquerque, N. M. –Stryco Sales, Inc., P. O. Box 1098
Anchorage, Alaska–The Al Johnson Equip. Co., P. O. Box 4-912
Atlanta, Ga. –Jas. B. Barton Jr. Co., 2135 Liddell Dr., N. E.
Barrington, R. I. –E. L. Tiffany, #2 Vera Court
Birmingham 3, Ala. –H. G. Mouat Co., 544 American Life Bldg.
Boise, Idaho–House of Wheels, 1026 LaPointe St.
Buffalo 10, N. Y. –The Lanich-Schreiner Co., Inc., 603 S. Park Ave.
Charlotte 1, N. C. –Engineering Sales Co., 123 W. 29th St.
Chicago 10, Ill. –Dorsey Equip. Co., 228-230 W. Kinzie St.
Chicago 2, Ill. –J. D. Marshall International, Inc., 170 W. Washington
Cincinnati 12, Ohio–Furnish Equip. Co., Inc., 4314 Montgomery Rd.
Cleveland 31, Ohio–Morrison Company, 5415 Schaaf Rd.
Columbus 12, Ohio–Edward J. Sherry Co., 1055 W. Third Ave.
Dallas 1, Tex. –A. C. Andrews Co., 2125 Main St.
Dayton 19, Ohio–The Jim Monesmith Co., 438 Patterson Rd.
Denver 2, Colo. –McDonald-Hunt Scale & Supply Co., 1540 Wazee St.
Des Moines 4, Iowa–M. A. Larson, 2 Ninth St.
Detroit 3, Mich. –Eastern Michigan Ind. Sales Co., 14544 Third Ave.
Duluth 2, Minn. –Victor W. Getts, 303 Board of Trade Bldg.
Evansville 5, Ind. –Drake Supply Co., Inc., 108 N. Elliot St.
Grand Rapids, Mich. –Morrison Industrial Equip. Co., 1825 Monroe Ave., N. W.
Houston 19, Tex. –Burns Equip. Co., P. O. Box 13104
Indianapolis 5, Ind. –W. A. Marschke & Sons, Inc., 1121 E. 46th St.
Jacksonville 7, Fla. –Peter G. Ward, 1316 June St.
Kansas City 5, Mo. –Reliance Equip., Inc., 500 W. 14th St.
Knoxville, Tenn. –Bigelow & Associates, 114 17th St.
Latham, N. Y. –Rushmore & Weber, Inc., 990 New Loudon Rd.
Little Rock, Ark. –M. W. Shelton, Box 943
Los Angeles 23, Calif. –H. L. Stewart & Associates, 1547 Estudillo
Louisville 2, Ky. –Bohnert Equip. Co., Inc., 106 W. Main St.
Madison, Wis. –John Arch Turner, Trans. Consultant, 5780 Old Middleton Road
Memphis 1, Tenn. –The Lilly Co., 466-68 Union
Meriden, Conn. –The Production Equip. Co., 401 Liberty Ave.
Miami, Fla. –Southern Industrial Equip. Co., 3294 N. W. 36th St.
Milwaukee 4, Wisc. –Ingerman Assoc., Inc., 500 W. National Ave.
Nashville 3, Tenn. –Dozier Equip. Co., 1531 Demonbreun St.
New Orleans 25, La. –The Reynick Co., 4018 Thalia St.
Oakland 7, Calif. –E. C. Buehrer Assoc., Inc., 253 4th St.
Oakland 7, Calif. –Oakland Warehouse, 2527 Magnolia St.
Oklahoma City 5, Okla. –Medley Scale & Equip. Co., 26 N. W. 26th St.
Omaha, Nebr. –Prescott Heald & Son, 1114 Jackson St.
Peoria, Ill. –Grant L. Nelson Co., 1304-06 First Nat'l Bank Bldg.
Philadelphia 6, Pa. –Diagraph-Bradley Industries, Inc., 409 Arch St.
Phoenix, Ariz. –Kinney Materials Handling Equip. 929 Grand Ave.
Pittsburgh 16, Pa. –Pennell Associates, 3223 W. Liberty Ave.
Portland 9, Ore. –F. E. Bennett Co., 426 N. W. Sixth Ave.
Rochester 7, N. Y. –B. C. Wendt, 74 Park Ave.
Rockford, Ill. –Carl E. Paulson, 815 Broadway, P. O. Box 1585
St. Louis 3, Mo. –Factory Trucking Equip. Co., 2224 Olive St.
St. Paul 14, Minn. –Cassidy Brothers, 2295 University Ave.
Salt Lake City 1, Utah–Equipment Supply Co., 16 Post Office Place
San Antonio 6, Tex. –Wm. F. Behring and Son, 304 Aztec Bldg.
San Diego 2, Calif. –Standard Iron Supply, Inc., Harbor Drive & Beardsley, P. O. Box 9
Scranton 3, Pa. –H. G. Murphy Sales, Inc., 803 Scranton Nat'l Bank
Seattle 4, Wash. –Secord Sales Co., 93 Connecticut St.
Sioux Fall, S. D. –G & H Distributing Co., 408 S. Second Ave.
South Bend 18, Ind. –Cass Hudson Co., 1013 S. Michigan St.
Spokane 11, Wash. –Carter-Miller Mill Furnishing Co., N. 1324 Ash St. Station, 4450 E. Admiral Place
Toledo 2, Ohio–Ralph Shawaker Co., 17 17th St.
Tulsa 15, Okla. –Material Handling, Inc., P. O. Box 13609 - Admiral
Union, N. J. –Diagraph-Bradley Industries, Inc., 945 Brighton St.
Washington 6, D. C. –Paul H. Worres Co., Inc., 1832 M St., N. W.
Watertown, S. Dakota–W. C. "Bill" Willis, P. O. Box 91
West Roxbury 32, Mass. –Diagraph-Bradley of New England, 2024 Centre
Wichita, Kan. –Cushman Sales and Service, 1353 N. Spruce
York, Pa. –J. L. Herchelroth, 309 N. Hartley St.

OAKITE PRODUCTS, INC.
140 Rector St., New York 6, N. Y.

Division Offices:

Atlanta 3, Ga. –417 Palmer Bldg.
Chicago 11, Ill. –412 Wrigley Bldg., 400 N. Michigan
Cleveland 14, Ohio–804 Citizens Bldg., 850 Euclid Ave.
Dallas 1, Tex. –Kirby Bldg., 1509 Main St.
Detroit 2, Mich. –8-237 General Motors Bldg.
Hartford 3, Conn. –428 Capitol Bldg., 410 Asylum St.
Kansas City 11, Mo. –511 V. F. W. Bldg., 406 W. 34th St.
Los Angeles 12, Calif. –1001 E. First St.
Louisville 7, Ky. –304A St. Matthews Professional Bldg., 4211 Nurbourne Blvd.
Milwaukee 2, Wis. –757 N. Broadway
New York 6, N. Y. –19 Rector St.
Philadelphia 2, Pa. –612 Robinson Bldg., 42 S. 15th St.
Pittsburgh 28, Pa. –733 Washington Rd.
Rochester 4, N. Y. –226 Fitch Bldg., 315 Alexander Blvd.
St. Louis 5, Mo. –409 Siteman Bldg., 111 S. Bemiston Ave.
San Francisco 9, Calif. –572 Monadnock Bldg., 681 Market St.

Toronto 2, Ont., Canada–8 Berkeley St.

OCCUPATIONAL HYGIENE SERVICES
234 Calvary St., Waltham 54, Mass.

OHIO CHEMICAL & SURGICAL EQUIPMENT CO.
Division of Air Reduction Company, Inc.
1400 E. Washington Ave., Madison 10, Wis.

Branch Offices:

Berkeley 10, Calif. –Ohio Chemical Pacific Co., Division of Air Reduction Co., Inc., 1231 Second St.

Distributors:

Aurora, Ill. –E & J Resuscitator Service Co., 409 N. View, P. O. Box 670
Burbank, Calif. –E & J Resuscitator Sales & Service, 621 N. Lima
Denver 16, Colo. –Union Supply Co., P. O. Box 6735, 5460 Colorado Blvd.
Drexel Hill, Pa. –L. F. Weckerly, Distributor-E & J Resuscitators, 409 Shadeland Ave.
Lafayette, La. –Delta Fire & Safety, Inc., P. O. Box 1669, Oil Center Station
Mercer Island, Wash. –The Givens Co., 3050 81st Place S. E.
Mt. Vernon, N. Y. –E & J Resuscitator Service, 9 Prospect Ave., W.
Sacramento 8, Calif. –Capital Fire Equip. Co., P. O. Box 1775

OIL-DRI CORPORATION OF AMERICA
520 N. Michigan Ave., Chicago 11, Ill.

ONDNITE COMPANY, THE
220 Passaic St., Passaic, New Jersey

Branch Offices:

Atlanta 8, Ga. –805 Peachtree St., N. E., Rm. 509
Birmingham 5, Ala. –P. O. Box 428
Boston 10, Mass. –411 "D" Street
Charleston 4, W. Va. –1799 Huber Road
Chicago 29, Ill. –6045 South Knox Ave.
Cincinnati 6, Ohio–Naz Business Center, 2904 Woodburn Ave.
Cleveland 3, Ohio–P. O. Box 1407, Station B
Dallas 7, Tex. –5052 Sharp St., P. O. Box 10627
Denver 6, Colo. –Enterprises Bldg., 2829 East 2nd St.
Detroit 20, Mich. –531 Livernois Ave.
Houston 6, Tex. –DeGeorge Bldg., Suite 202, 3520 Montrose Blvd.
Kansas City 8, Mo. –Davidson Bldg., 1627 Main Street
Los Angeles 22, Calif. –6500 E. Washington Blvd.
Milwaukee 6, Wis. –711 W. Capitol Drive
New Orleans 12, La. –860 St. Charles Street
Philadelphia 40, Pa. –20th and Venango Streets.
Pittsburgh 33, Pa. –1011 Brighton Road
Portland 4, Oregon–Builders Exchange Bldg., Rm. 427, 320 S. W. Stark Street
St. Louis 10, Mo. –4641 McRee Avenue
Salt Lake City 15, Utah–Surety Life Bldg., Rm. 528, 1935 S. Main St.
South San Francisco, Calif. –230 Shaw Road
Syracuse 3, N. Y. –216 Burnet Ave.

ONOX, INC.
121 Second St., San Francisco 5, Calif.
****See ad page 78.**

Branch Offices:

Cleveland 4, Ohio–2654 Lisbon Rd.
Murray Hill, N. J. –675 Central Ave.
New Orleans 1, La. –118 N. Front St.

OPTICASE COMPANY, THE
150 Dickerson St., Newark 7, N. J.

OSBORN MANUFACTURING CORPORATION
Box 271, Warsaw, Indiana
****See ad page 219.**

OVAL WOOD DISH CORPORATION
Tupper Lake, N. Y.
****See ad page 297.**

Distributors:

Paper, Wholesale Grocery, Wholesale Drug, Restaurant Supply Distributors in most cities carry the lines.

OXY-CATALYST, INC.
511 Old Lancaster Rd., Berwyn, Pa.
****See ad page 124.**

Distributors:

Los Angeles 23, Calif. –B. T. Equip. Co., 3312 E. Olympic Blvd.

OXYGEN EQUIPMENT & SERVICE COMPANY
8335 S. Halsted Street, Chicago 20, Illinois

OXY-GEAR INCORPORATED
30 N. La Salle St., Chicago 2, Ill.

Branch Offices:

Ann Arbor, Mich. –3335 Springbrook Ave.

Distributors:

Bettendorf, Ia. –Davenport Tr. & Equip. Co., 1330 Grant St.
Buffalo, N. Y. –Emad Co., 1573 S. Park Ave.
Chicago, Ill. –Inst. Purchasers Inc., Merchandise Mart
Chicago, Ill. –E. Chaitkin, 100 N. La Salle St.
Chicago, Ill. –Co-op Electric Co., 812 W. Jackson Blvd.
Chicago, Ill. –W. L. McKinney, 5943 N. Magnolia
Cleveland, Ohio–Ess-Jay Sales, 2785 Avondale Rd.
Columbus, Ohio–Columbus Hosp. Supply, 935 W. Goodale
Conshohocken, Pa. –Criminal Res. Prd. Inc., 725 Harry St.
Dayton, Ohio–Dayton Safety Supply, 11 Longworth St.
Detroit, Mich. –Co-Med Drug Co., 19501 Joy Rd.
Detroit, Mich. –Gordon E. Doule Co., 16929 Wyoming
Detroit, Mich. –Pharmacy Supply Hse., Maccabee Bldg.
Detroit, Mich. –Ira H. Smith, 16147 W. McNichols Rd.
Detroit, Mich. –Sterling H. Dockson, 5285 E. Outer Dr.
Duluth, Minn. –W. P. & R. S. Mars Co., 322 W. Michigan
Elizabeth, Pa. –Oxygen Emerg. Supply Co., P. O. Box 325
Fairport, N. Y. –Be-Safe Equip. Sales, 172 High St.
Flossmoor, Ill. –A. Franze Sales Co., 1303 Dixie Dr.
Fort Wayne, Ind. –Marvel Williams Co., 411 W. Superior St.
Hanover, N. J. –Oxygen Kit Co., P. O. Box 243
Indianapolis, Ind. –Bowman of Ind., Inc., 2161 N. Capitol
Indianapolis, Ind. –Litteral Distr. Co., 1728 W. 16th St.
Kokomo, Ind. –Snepp & Fager, 119 E. Walnut St.
Lake Zurich, Ill. –J. Edler
Lincoln Park, Mich. –Almco Inds. Supplies, 1457 Dyx
Minneapolis, Minn. –Elvin First Aid Supply, 327 2nd Ave. N.
Minneapolis, Minn. –Viking Saf. Prod. Inc., 228 S. Center Lake
Morris Plaines, N. J. –Fire Fighters Equip. Co., P. O. Box 324
New York, N. Y. –John Prior Inc., 44 Whitehall St.
New York, N. Y. –Schueler & Co., 75 Cliff St.
Oakland, Calif. –Indstr. Safety Supplies Co., 2205 San Pablo
Oak Park, Mich. –Oxygen Therapy Sales, 13210 Dartmouth
Oak Park, Mich. –Speidel Safety Service, 22150 Westhampton
Palatine, Ill. –Powell Studios, Powell Bldg.
Portland, Ore. –Shaw Surgical Co., 902 S. W. Yamhill
Portland, Ore. –Utility Trai. Equip. Co., 4771 E. 17th St.
Rochester, N. Y. –Monroe Surg. Supply Co., 93 Monroe St.
Royal Oak, Mich. –Michigan First Aid, 1621 S. Woodward
Sabinal, Tex. –M. Williamson & Assoc., P. O. Box 687
San Diego, Calif. –W. W. Wick, Co., 3646 5th Ave.
Shaker Hgts., Ohio–Al T. White 2526 Warwick Rd.
Toledo, Ohio–Knauer Supply Co., 3835 Baltimore
Tucson, Ariz. –Grinnell Fire Fight. Equip., 2521 N. Stone Ave.
Urbana, Ill. –Illini Fire Equip. Co., 1105A N. Main St.
Vincennes, Ind. –West Saf. Equipm. Co., 1307 E. St. Clair
Wichita, Kan. –Walter W. Ganzer, 1127 Patricia St.

Mont., Que., Can. –Canadian Fire Hose Co. Ltd., 8127 Notre Dame St.
Toronto, Ont., Can. –Safety Supply Co., 214 King St.

OXY-LYFE CORP.
3232 Archer Ave., Chicago 8, Ill.
****See ad page 277.**

PAC-KIT SAFETY EQUIPMENT CO., THE, INC.
P. O. Box 1306, Greenwich, Conn.
****See ad page 280.**

Distributors:

Albuquerque, N. M. –Davis Bros. Co.
Atlanta, Ga. –Scientific Lab. Supply Co., 139 Forrest Ave. N. E.
Avoca, (Rochester) N. Y. –Robin W. Adair Co.
Buffalo 20, N. Y. –Steinwach's Safety Supply, 1573 S. Park Ave.
Charleston, W. Va. –Property Protection Co., 422 Washington St., W.
Clayville, R. I. –The Pro-Tect-All Co.
Columbus, Ohio–The Orr, Brown & Price Co., 49-51 W. Spring St.
Cumberland, Md. –Fire Extinguisher Sales, 208 Glenn St.
Denver, Colo. –Davis Bros. Inc., 1628 15th St.
Des Moines, Iowa–Iowa Sickroom Supply Co., 607 Cherry St.
Great Falls, Mont. –Moriarty Enterprise, 706½ 28th St. N.
Hempstead, N. Y. –Hempstead Surgical Co., 475 Fulton Ave.
Houston, Tex. –The Medical Supply House, 8915 N. Main St.
Indianapolis, Inc. –Akron Surgical House, Inc., 221-223 N. Pennsylvania St.
Jackson, Mich. –Utility & Industrial Supply, 921 E. Michigan Ave.
Lincoln, Nebr. –Donley Medical Supply, 2415 "O" St.
Los Angeles 54, Calif. –Brunswig Drug Co., 4701 Santa Fe Ave.
Louisville, Ky. –Al Safety Supply, 314 E. Jacob
Meridian, Miss. –J & J Supply Co., 2333 Front St.
Miami, Fla. –Amedic Surgical Co., 1501 N. W. 10th Ave.
Milford, Conn. –Safety Prod. Co., 655 Bridgeport Ave.
Milwaukee, Wis. –General Fire Equipment, 821 W. Atkinson St.
Minneapolis, Minn. –De-Pro Enterprise, 3424 Longfellow Ave., S.
Montgomery, Ala. –Durr Surgical Supply, 2061 W. Fairview Ave.
Nashville, Tenn. –Nashville Surgical Supply, 1911 Church St.
New Orleans, La. –Woodward, Wight & Co. Ltd., 451 Howard Ave.
Newark, N. J. –General Medical Supply Co., 407 Elizabeth Ave.
New York, N. Y. –Industrial Drug Co., 106 Spring St.
Norfolk, Va. –A-D Surgical Supply Co., 612 Colonial Ave.
Oklahoma City, Okla. –Fire Appliance & Supply, 1512 W. Reno
Pekin, Ill. –H. R. McGarvey, Inc., 354 Margaret St.
Portland, Maine–Eastern Fire Equip., 403-405 Fore St.
Portland, Oregon–Physician & Hospital Supply, 112 N. W. 20th Ave.
St. Louis, Mo. –A. S. Aloe Co., 1831 Olive St.
Sarasota, Fla. –Fire Protection Equip., 24 Nevus St.
Teaticket, Mass. –Fyr-Fyter Sales & Serv.
Tucson, Ariz. –Supplies For Industry, Inc., 1202 N. Main
Washington, D. C. –Henry B. Gilpin Co., 229-235 7th St. S. W.
Wichita, Kansas–Mid-Continent Resuscitator Serv. –721 Antler
Wilmington, Dela. –John G. Merkel & Sons, Inc., 801 N. Union St.

Edmonton, Alberta, Canada–Reno Fire & Safety Equip., 10724 101st St.
Sudbury, Ont., Canada–Commercial Safety Aids Co., 400 Montague St.

PACKWOOD, G. H., MANUFACTURING COMPANY
1545 Tower Grove Avenue, St. Louis 10, Missouri
****See ad page 77.**

PANGBORN CORPORATION
Hagerstown, Maryland

Branch Offices:

Augusta, Ga. –P. O. Box 842
Baltimore, Md. –
Birmingham 13, Ala. –P. O. Box 9217
Buffalo 26 (Snyder)–67 Charlestown Rd.
Chicago (Oak Park), Ill. –940 South Oak Park Ave.
Cincinnati 27, Ohio–6914 Miami Rd.
Cleveland 6, Ohio–9802 Euclid Ave.
Detroit 2, Mich. –614 Stephenson Bldg.
East Orange, N. J. –606 Central Ave.
Hagerstown, Md. –Pangborn Blvd.
Houston 2, Tex. –201 Scanlon Bldg.
Indianapolis 20, Ind. –665 E. 61st St.
Los Angeles (Pasadena), Calif. –595 E. Colorado Blvd.
Milwaukee 3, Wis. –608 W. Wisconsin Ave.
Philadelphia (Lansdowne), Pa. –212 Lansdowne Center Bldg.
Pittsburgh 21, Pa. –700 Wood Street, Rm. 105
Rock Island, Ill. –2223 26th Street
St. Louis 22 (Kirkwood), Mo. –10406 Manchester Rd.
San Francisco 3, Calif. –932 Howard St.
Springfield 3, Mass. –121 Lyman St.
Syracuse 2, N. Y. –406 Syracuse Kemper Ins. Bldg.

PARK INDUSTRIES, INCORPORATED
4328 Oakwood Blvd., Melvindale, Michigan

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Distributors:

Contact manufacturer for nearest distributor

PATENT SCAFFOLDING CO., THE, INC.
38-21 12th St., Long Island City 1, N.Y.
**See ad page 53.

Branch Offices:

Atlanta 3, Ga.—38 Haynes St.
Baltimore 30, Md.—1533 Ridgely St.
Boston 36, Mass.—76 Ashford St., Allston
Charlotte 6, N. C.—1542 Lucena Ave.
Chicago 22, Ill.—1550 Dayton St.
Cleveland 13, Ohio—2501 W. Third St.
Dallas 7, Tex.—2200 Singleton Blvd.
Detroit 4, Mich.—11500 Wyoming Ave.
Kansas City 6, Mo.—1520 E. Truman Rd.
Los Angeles 1, Calif.—6931 Stanford Ave.
Miami 50, Fla.—7140 N. Miami Ave.
Milwaukee 4, Wis.—135 E. Pittsburgh Ave.
New Orleans 18, La.—8000 Edinburgh St.
Newark 12, N. J.—429 Frelinghuysen Ave.
Newark Valley, N. Y.—Main St.
Newington, Conn.—2545 Berlin Turnpike
Philadelphia 37, Pa.—2835 Bridge St.
Pittsburgh 12, Pa.—1254 Voskamp St.
St. Louis 14, Mo.—6168 Bartmer Ave.
San Francisco 3, Calif.—1695 Mission St.
Seattle 9, Wash.—420 Eighth Ave., N.

Toronto, Ont., Canada—329 Dufferin St.

PENDERGAST, ALBERT W., SAFETY EQUIPMENT CO.
6936 Tulip St., Philadelphia 35, Pa.

PENETONE COMPANY, THE
74 Hudson Ave., Tenafly, N.J.

Branch Offices:

Los Angeles 21, Calif.—1855 Industrial St.
Surrey, England—P. O. Box 10 Egham

Distributors:

Baltimore, Md.—Maryland Ship Supply Co., 114 S. Frederick St.
Baltimore, Md.—R. S. Stern, Inc., 420 W. Conway St.
Baltimore, Md.—R. J. Taylor Co., 39 S. Gay St.
Baton Rouge, La.—Neptune Supplies, Inc., 2436 Weller Ave.
Boston, Mass.—Boston Provision Co., 30 Atlantic Ave.
Boston, Mass.—James Bliss & Co., Inc. 342 Atlantic Ave.
Camden, N. J.—Antrim Hardware Co., 1514 Federal St.
Charleston, S. C.—Southeast Supply Co., 10 Lingsand St.
Houston, Tex.—Texas Marine Supply Co., 8106 Harrisburg Blvd.
Mobile, Ala.—Marine Specialties, Inc., 6 S. Water St.
New Orleans, La.—Neptune Supplies, Inc., 209 Peters St.
New York, N. Y.—Baker-Carver & Morrell, 35 Water
New York, N. Y.—E. Bergendahl Co., Inc., 33 Pearl St.
New York, N. Y.—Mercantile Ship Supply Co., 5 Water St.
New York, N. Y.—Wm. H. Swan & Sons, 51 Water St.
Norfolk, Va.—Cavalier Marine Supply, 57 Commerce St.
Norfolk, Va.—Wm. H. Swan & Sons, 4 Commerce St.
Philadelphia, Pa.—Anglo-American Trading Co., 241 N. Front St.
Philadelphia, Pa.—Baker-Carver & Morrell, 201 S. Front St.
Philadelphia, Pa.—Delaware Ship Supply Co., 1117 S. Second St.
Philadelphia, Pa.—Bergendahl Co., Inc., 114 S. Front St.
Portland, Me.—Brown Ship Chandlery, 76 Commerce St.
Portland, Me.—A. L. Griffin & Co., 20 Custom House Wharf
Savannah, Ga.—Southern Marine Supply Co., 202 W. Bay St.
San Francisco, Calif.—Industrial Materials Co., 383 Brannan St.
San Pedro, Calif.—Harbor Ship Supply Co., 401 S. Mesa St.
Seattle, Wash.—International Sales Co., 1230 Westlake Ave.
Tampa 2, Fla.—Tracy's Ship Supply, 936 Twiggs St.
Texas City, Texas—J. C. Sieffert, Ship Supply Co., 612 2nd Ave.
Toledo, Ohio—Toledo Marine Supply, 1646 N. Erie St.

Aruba, Netherland Antilles—Joseph Oduber, Essoville-San Nicolas
Beirht, Lebanon—Zaloom & Saman, Box 1622
Gothenburg, Sweden—C. Ljungdahls, 4 St. Eriksgaten
Havana, Cuba—Gaston Renaud Tapie, Casa Daner
Kobe, Japan—Fuji Industries Ltd., Medai Bldg.
Mayaguez, P. R.—Dodd Industrial Supply Co., 78 Commerce St.
Port of Spain, Trinidad—Paria Ltd., 56 Sackville St.
Yokahama, Japan—Shimoi & Co., Ltd., 20 Sagiyama Naka-Ku
Zona Libra De Colon, Canal Zone (Panama)—Colon Import & Export Co.
Agents also in: Finland, Norway, Denmark, Germany, Netherlands, Belgium, France, Portugal, Switzerland, Austria, Italy, Greece.

PENNSYLVANIA SLING COMPANY
501 McNeilly Rd., Pittsburgh 26, Pa.

Branch Offices:

Cleveland 13, Ohio—2168 W. 25th St.
Harrisburg, Pa.—4220 Paxton St.

PETERSON, R.E., COMPANY
Turlock, California

PHOTOMATION, INC.
96 S. Washington Ave., Bergenfield, N.J.

Branch Offices:

Rochester 25, N. Y.—800 Linden Ave.
Clinton, Iowa—208 Johannes Building
Albany, N. Y.—9 Highland Avenue
Roselle Park, N. J.—472 E. Westfield Ave.
Suffolk, Va.—P. O. Box 141

Representatives:

Beaverton, Ore.—Sight & Sound, 4325 S. W. 96th Ave.
Boston 10, Mass.—Power Equipment Sales, Inc., 77 Summer St.
Buffalo 7, N. Y.—The Stone Co., 1807 Elmwood Ave.
Charlotte 1, N. C.—Industrial & Textile Supply Co., 1300 S. Mint St., P. O. Box 1249
Chicago 10, Ill.—Meters & Controls, Inc., 444 N. LaSalle St.
Cincinnati 42, Ohio—Chapman Engineering Sales, Blue Ash Center Bldg., 4866 Cooper Rd.
Cleveland 23, Ohio—Illes Power Control Co., 22700 Shore Center Dr. Bullard Building
Dallas 20, Tex.—Whitson Engineering Co., 2680 Freewood St., P. O. Box 13431
Dearborn 7, Mich.—Robert B. Turpin Co., 1119 Monroe Blvd.
Denver 23, Colo.—Landes, Zachary & Peterson Co., 601 S. Jason St.
Detroit 27, Mich.—Ralph D. Ernest Assoc., 12018 Puritan Ave.
Indianapolis 4, Ind.—Henry J. Morath Co., 325 Bankers Trust Bldg.
Jersey City, N. J.—W. C. Bellis Equip. Co., 15 Exchange Pl.
Kansas City, Mo.—Economy Equipment Co., 7341 Broadway
Kenner, La.—Emile C. Deshautreaux, Jr., P. O. Box 261
Knoxville 5, Tenn.—Leinart Engineering Co., 412 E. Fifth Ave.
Los Angeles 39, Calif.—Crown Berkley Engineering Inc., 2439 Riverside Drive
Louisville, Ky.—Charles Weber Co., 536 Eastern Parkway
Miami, Fla.—J. Neal & Co., 3931 S. W. Fifth Terrace
Memphis 6, Tenn.—Process & Power Inc., 1565 Harbor Ave., P. O. Box 18118
Milwaukee 9, Wis.—Geo. H. Fredricks & Co., Inc., 4305 N. Green Bay Ave.
Minneapolis 17, Minn.—A. J. Warner Co., 5022 29th Ave. S.
New York 38, N. Y.—Energy Control Co., Inc., 5 Beekman St.
Orinda, Calif.—Sillison Assoc., 39 Orinda Way, P. O. Box 72
Prendel, Pa.—William Hagan & Co., Box 134
Pittsburgh 19, Pa.—Jno. D. Hiles Co., Inc., Plaza Building
Richmond 1, Va.—Power Equip. Co., 1309 W. Main St., P. O. Box 1-G
St. Louis 8, Mo.—Bruce, Warren & Co., 4903 Delmar Blvd.
Seattle 4, Wash.—John Williams Co., 766 Dexter Horton Bldg.
Washington 6, D. C.—Meleney Engineering Co., 828 Mills Bldg., 794 17th St., N.W.

Montreal 25, P. Q., Canada—Biotronics Laboratories, P. O. Box 744, Station "B", 1549 Burnside St., Suite #3
Toronto, Ont., Canada—The Polytronics Co., 582 Bathurst St.
Sodertalje, Sweden—A. B. Regula, Sjomansvagen 30

PIONEER RUBBER CO.
Tiffin Rd., Willard, Ohio
**See ad pages 152 and 153.

Branch Offices:

Dallas 7, Tex.—Pioneer Rubber Co. of Texas, 1515 Dragon St.
Los Angeles 54, Calif.—Pacific States Rubber Co., 644 N. Vermont Ave.

PIONEER SCIENTIFIC CO.
Division of Bausch & Lomb Inc.
645 St. Paul St., Rochester 2, N. Y.

PITTSBURGH PLATE GLASS CO.
220 Grant Bldg., Pittsburgh, Pa.
**See ad page 65.

PLASCO SAFETY PRODUCTS CO.
21 W. Pleasant St., Springfield, Ohio

Branch Offices:

Des Moines, Iowa—732 18th St.
Los Alamitos, Calif.—11732 Wembley Rd.
Reading, Mass.—1207 Main St.
St. Louis, Mo.—6611 Clayton Road

PLASTIC WIRE & CABLE CORPORATION, THE
East Main Street, Jewett City, Connecticut
**See ad page 150.

PLASTIMAYD CORPORATION
2204 S. E. Seventh Ave., Portland 14, Ore.

PORCELAIN ENAMEL FINISHERS
3221 West 30th St., Chicago 23, Ill.

PORTABLE OXYGEN COMPANY
1124 S. Beverly Drive, Los Angeles 35, Calif.

PORTO-CLINIC INSTRUMENTS, INC.
298 Broadway, New York 7, N. Y.

POSITIVE SAFETY MANUFACTURING COMPANY
4408 Perkins Ave., Cleveland 3, Ohio
**See ad page 221.

POWERS REGULATOR CO., THE
Skokie, Ill.

Branch Offices:

Akron 2, Ohio—227 W. Exchange St.
Arlington, Va.—3415 N. Washington Blvd.
Atlanta 9, Ga.—559 Dutch Valley Rd., N. E.
Baltimore 16, Md.—3414 Duvall Ave.
Boston 21, Mass.—295 Columbia Rd.
Buffalo 17, N. Y.—2595 Elmwood Ave.
Champaign, Ill.—207 W. University Ave.
Charlotte 3, N. C.—521-B Dowd Rd.
Chicago 26, Ill.—6655 N. Ridge Blvd.
Cincinnati 37, Ohio—7612 Reinhold Dr.
Cleveland Hgts. 18, Ohio—1955 Lee Rd.
Columbia, S. C.—1224 Pickens St., Rm. 105
Columbus 12, Ohio—1395 Grandview Ave.
Dallas 35, Tex.—7707 Sovereign Row
Davenport, Iowa—Rm. 204 Union Arcade Bldg.
Dayton 5, Ohio—1416 North Main St.
Denver 23, Colo.—240 Kalamath St.
Des Moines 14, Iowa—907 Sixth Ave.
Fargo, N. D.—162½ South 13th St.
Green Bay, Wis.—308 Main St.
Greensboro, N. C.—1002 Arnold St.
Greenville, S. C.—1601 Pleasantburg Dr.
Houston 6, Tex.—2425 South Blvd.
Indianapolis 2, Ind.—1413 E. Riverside Dr.
Jackson, Miss.—5044 N. State St.
Jacksonville 3, Fla.—4556 Lenox Ave.
Kansas City 8, Mo.—1811 Walnut St.
Little Rock, Ark.—1610 West 14th St.
Los Angeles 26, Calif.—3200 W. Temple St.
Louisville 2, Ky.—319 W. Jefferson St.
Milwaukee 16, Wis.—4395 North 35th St.
Minneapolis 13, Minn.—344 Taft St., N. E.
Newington, Conn.—142 Market Square
New Orleans 19, La.—3144 Paris Ave.
New York 17, N. Y.—231 E. 46th St.
Oklahoma City 6, Okla.—1726 N. W. Fifth St.
Omaha 5, Nebr.—3171 Leavenworth
Peoria, Ill.—908 East Glen Ave.
Philadelphia 26, Pa.—1400 Willow Ave.
Phoenix, Ariz.—6509 North 16th St.
Pittsburgh 16, Pa.—2893 Banksville Rd.
Portland, Maine—497 Fore St.
Portland, Ore.—2909 N. E. 58th St.
Richmond, Va.—2205 Tazewell St.
Roanoke, Va.—1227 Patterson Ave., SW
Rochester 8, N. Y.—135 Spring St.
Sacramento, Calif.—7500 14th Ave.
St. Louis 10, Mo.—2114 99th St.
Salt Lake City 15, Utah—233 W. 13th., S.
San Antonio, Tex.—109 Lexington Ave.
San Diego 4, Calif.—2318 30th St.
San Francisco 7, Calif.—161 Missouri St.
Schenectady 4, N. Y.—4020 State St.
Seattle 99, Wash.—511 Second Ave., W.
Sioux Falls, S. D.—2009 S. Minnesota Ave.
South Bend 17, Ind.—520 E. LaSalle Ave.
Springfield, N. J.—30 Commerce St.
Syracuse 5, N. Y.—115 Ainsley Dr.
Tampa 9, Fla.—2825 S. MacDill Ave.
Tulsa 3, Okla.—416 West Third St.
Wichita 2, Kan.—216 East Waterman
Youngstown, Ohio—138 W. Rayen St.

PRACTICAL MFG. CO.
Kleer-Flo Div.
1009 N. Hill St., Hopkins, Minn.
**See ad page 00.

Branch Offices:

New York 19, N. Y.—Kleer-Flo Co., 250 W. 57th St.

Distributors:

Write to either of above addresses for name of distributor nearest you.

PRAIRIE STATE PRODUCTS CO.
3822 Lawrence Ave., Chicago 25, Ill.
**See ad page 289.

PRENCO MANUFACTURING CO.
2605 W. 14 Mile Rd., Royal Oak, Michigan

PRES-ON PRODUCTS CO.
Factory Road, Addison, Ill.

PROTECTO EAR PLUGS, INC.
396 Grove St., Jersey City 2, N.J.

Branch Offices:

Burbank, Calif.—4121 W. Alameda

PROTECTOSEAL COMPANY, THE
1920 S. Western Ave., Chicago 8, Ill.
**See ad page 237.

Branch Offices:

Atlanta 14, Ga.—565 Western Ave., N.W.
Bethesda, Md.—8210 Thoreau Drive
Camden, N. J.—3rd & Jackson Sts.
Cleveland 13, Ohio—1300-1338 W. Ninth St.
Denver 2, Colo.—1921 Blake St.
Detroit 2, Mich.—505 Curtis Building
Devon (Milford), Conn.—411 Bridgeport Ave.
Ferguson, Mo.—980 Marie St.
Houston 1, Tex.—P. O. Box 92, 2205 McKinney Ave.
Los Angeles 58, Calif.—4802 Loma Vista Ave.
St. Paul, Minn.—1499 University Ave.

Distributors:

Toronto, Ont., Canada—Safety Supply Co., 214 King St., E.

PROTO TOOL CO.
2209 Santa Fe Ave., Los Angeles 58, Calif.

PULMOSAN SAFETY EQUIP. CORP.
644 Pacific St., Brooklyn 17, N.Y.
**See ad page 130.

Branch Offices:

St. Louis 1, Mo.—1007 Washington Ave.

Distributors:

Located in principal cities.

PUTNAM ROLLING LADDER COMPANY, INCORPORATED
32 Howard Street, New York 13, New York
**See ad page 70.

Distributors:

Atlanta, Ga.—Ladder Distributors, 760 Edgewood Ave., N. E.
Avoca, New York—Robin Adair
Baton Rouge, La.—Guardian Safety, 3615 Capital Hghts. Ave.
Baltimore, Md.—Graybar Electric Co., Inc., 3701 E. Monument St.
Billings, Mont.—Big Horn Supply Inc., P. O. Box 2036
Birmingham, Ala.—Industrial Safety & Supply Co., 1727 Huntsville
Cheyenne, Wyo.—Western Safety Equipment, 1822 O'Neill St.
Clarksburg, W. Va.—Prosperity Equipment Co., 106 E. Main Street
Cleveland, Ohio—Strong Carlisle & Hammond, 11770 Berea Road
Columbia "E" S. C.—Tidewater Supply Co., 807-811 Gervais St.
Denver 16, Colo.—Union Supply Co., 3460 Colorado Blvd.
Des Moines, Iowa—Midwest Supply Co., 601 Paramount Bldg.
Detroit, Mich.—Averill Equipment Co., 19225 Conant Ave.
East Orange, N. J.—Notte Safety Supply, 340 N. Park St.

Continued on next page

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Farmington, Mass.—Power Engineering Co., 11 Claflin St.
Fort Wayne 7, Ind.—Safety Equipment Supply Co., 1724 W. Main St.
Omaha, Nebr.—Graybar Electric Co., Inc., 3626 Martha St.
Houston, Tex.—Guardian Safety Equip., 200 Sandman St.
Jacksonville, Fla.—J. G. Christopher Co., 416-22 East Bay Street
Kansas City, Kan.—Zlek Safety Equip. Co., 1401 Fairfax Trafficway
Little Rock, Ark.—Graybar Electric Co., Inc., 417 Byrd Street
Louisville, Ky.—Orr Safety Equip. Co., 300 E. Main Street
Manchester, N. H.—Graybar Electric Co., Inc., 103 Hampshire Lane
Melrose Park, Ill.—Graybar Electric Co., Inc., 2045 N. Cornell Ave.
Memphis, Tenn.—Clements Safety Equip. Co., 720 S. 3rd St.
Milwaukee, Wis.—Pagel Safety Products, 4615 W. National Ave.
Minneapolis, Minn.—Modern Equipment, 3718 Cedar Ave.
Philadelphia, Pa.—Moulton Ladder Co., 154 North 3rd St.
Pittsburgh, Pa.—Safety First Supply Co., Inc., 425 Magee St.
Providence, R. I.—Graybar Electric Co., Inc., 194 Richmond St.
Portland, Me.—Graybar Electric Co., Inc., Center & Commercial Sts.
Portland 14, Ore.—Sanderson Safety Supply Co., 816 S. E. Hawthorne
Rutland, Vt.—Graybar Electric Co., Inc., 525 West Street
St. Louis, Mo.—Reis Equipment, 1417 Tower Grove Street
Salt Lake City 10, Utah—Universal Safety & Fire Equip. Co.
Sausalito, Calif.—E. D. Bullard, 2680 Broadway
Seattle 1, Wash.—Safety & Supply Co., 115 Blanchard St.
Sioux Falls, S. D.—Graybar Electric Co., Inc., 300 N. Phillips St.
Tulsa, Okla.—Guardian Safety Equip., 1742 S. Main Street
Washington, D. C.—Graybar Electric Co., Inc., 5925 Blair Rd, N. W.
West Hartford, Conn.—Industrial Safety Supply Co., 574 New Park
Wilmington, N. C.—Tidewater Supply Co., 157 Castle Hayne Rd.

PYRAMID FILM PRODUCERS
1636 N. Sierra Bonita Avenue, Hollywood 46, California

QUABAUG RUBBER CO.
School St., North Brookfield, Mass.
**See ad page 147.

RACINE GLOVE COMPANY, INCORPORATED
Box 38, Rio, Wisconsin

Branch Offices:

Atlanta, Ga.—95 Bennett St., N. W.
Chicago, Ill.—10046 South Oakley
Gross Pointe Woods, Mich.—1071 North Oxford Road
Los Angeles, Calif.—7800 Compton Ave.
St. Paul Park, Minn.—1367 Dixon Drive
West Orange, N. J.—P. O. Box 101

Export Division:

Cincinnati, Ohio—224 East 6th St.

Distributors:

Located in all Principal Cities

RACO PRODUCTS
Division of Robin W. Adair Co., Inc.
Box 248, Avoca, N. Y.

RADIANT COLOR CO.
830 Isabella St., Oakland, Calif.

Branch Offices:

Chicago, Ill.—461 W. Erie St.
New York City, N. Y.—249 W. 29th St.

Distributors:

Located in principal cities. Names on request.

RADIATION COUNTER LABORATORIES, INC.
5121 West Grove, Skokie, Ill.

Distributors:

Albuquerque, N. M.—Hyde Electronics, 5206 Constitution Ave.
Atlanta, Ga.—Ellison Co., 632 Healey Bldg.
Dallas, Tex.—Bob Bubel, 10131 Goodyear Ave.
Denver, Colo.—Hyde Electronics Co., 888 S. Lipan St.
Honolulu 6, Hawaii—Peil Co., Box 1441
Jackson Ville, Fla.—Bryan Goode, P. O. Box 2614
Los Angeles 15, Calif.—Wallace & Wallace, 1206 Maple Ave.
Newtonville, Mass.—Howard J. Schuft, 815 Washington St.
New York, N. Y.—M. J. Seavy & Sons, 30 Church St.
Palo Alto, Calif.—White & Co., 788 Mayview Ave.
Pittsburgh, Pa.—Glenn Carlson, 992 Perry Highway
Pleasant Ridge, Mich.—L. T. Martensen, 46 Ridge Rd.
Salt Lake City, Utah—Hyde Electronics, 2803 Connor St.
Seattle 8, Wash.—AHMCO, Room 110, Amd. Bldg.
Towson, Md.—S. S. Lee Assoc., 21 Pennsylvania Ave.
Wheaton, Md.—S. S. Lee Associates, 2521 Ennals Ave.
Winston-Salem, N. C.—S. S. Lee Associates, P. O. Box 906

Scarborough, Ont., Canada—Glendon Instruments, 46 Crockford Blvd.

RADIONICS, INCORPORATED
Lafayette & Water Sts., Norristown, Pennsylvania

Distributors:

Beverly, Mass.—Charles T. Morgan Co., 21 Lothrop St.
Charleston 30, W. Va.—R. C. Osborne Co., Rm. 324 Masonic Bldg.
Mount Vernon, N. Y.—Philips Electronic Instruments, 750 S. Fulton Ave.
Pittsburgh 34, Pa.—R. L. Holliday Co., Box 10333
Salt Lake City 4, Utah—Rowley-Bouvette, Inc., 955 Folsom Ave.
San Pedro, Calif.—K. Cummins, 539 21st Street

Montreal, Canada—L. E. Baxter, Ltd., 6077 Upper Lachine Rd.

RANDOLPH LABORATORIES, INC.
2450 Frontage Rd., Northbrook, Ill.

READY MADE SIGN COMPANY, INCORPORATED
115 Worth Street, New York 13, New York
**See ad page 286.

RECORD INDUSTRIAL COMPANY
3301 Arch St., Philadelphia 4, Pa.
**See ad page 155.

REECE WOODEN SOLE SHOE COMPANY
13th St. & 41st Ave., P. O. Box 32, Columbus, Nebr.
**See ad pages 184 and 274.

Distributors:

Located in principal cities.

REEVES SALES CO. INC.
4635 Magee Ave., Philadelphia 35, Pa.

RE-MAR PRODUCTS CORP.
205 Madison Ave., Elizabeth, N. J.
**See ad page 164.

RENFROE, J. C., & SONS, INC.
1926 Spearing St., Jacksonville 6, Fla.

Distributors:

Atlanta 8, Ga.—Ace Bolts & Nuts Co., Box 6162, Sta. H
Baltimore, Md.—Yankee Engineering Co., 3500 Washington Blvd.
Birmingham, Ala.—Welding Equip. & Supply Co., 417 S. 18th St.
Boston, Mass.—Philip A. Rand, 270 State St.
Brooklyn 15, N. Y.—Sharpe & Pulaski, 451 6th Ave.
Buffalo 23, N. Y.—Chas. S. Freeman Co., 1660 Kenmore Ave.
Cambridge, Mass.—Interstate Welding Supply Corp., 101 Binney St.
Chicago 8, Ill.—Industrial Crane & Hoist, Ingersoll Prod. Div., Borg-Warner Corp., 1536 S. Paulina St.
Chicago 39, Ill.—Kirk Lightbourne & Assoc., 2618 N. Laramie
Chicago 6, Ill.—Slings Mfg. & Dist. Co., 205 W. Wacker Dr.
Chicago 4, Ill.—U. S. Steel Cupply Co., 208 S. LaSalle St.
Cincinnati 25, Ohio—Orr Safety Equip. Co., 2853 Colerain Ave.
Cleveland 5, Ohio—Great Lakes Supply Co., 4115 E. 116th St.
Des Moines 6, Iowa—Globe Mach. & Supp. Co., 3.1st & Court
Detroit, Mich.—Chas. A. Strelinger Co., Box 4674
Euclid 23, Ohio—Great Lakes Splicing & Supply, 23570 Lakeland Blvd.
Hammond, Ind.—Conway-Calligan Corp., 464-466 Fayette St.
Hammond, Ind.—S. G. Taylor Chain Co., Inc.
Hartford, Conn.—L. L. Ensworth & Son, Inc., 270 Locust St.
Honolulu 14, Hawaii—Chapson Bros., Ltd., 755 Sheridan St.
Houston, Tex.—Peden Iron & Steel Co., Box 1891
Indianapolis, Ind.—Orr Safety Supply, 2431 E. Washington St.
Jacksonville, Fla.—C. W. Farmer Co., P. O. Drawer "Q"
Kearney, N. J.—Atlas Rigging & Supply Co., 462 Forest St.
Lakeland, Fla.—Equip. Service, Inc., 809 Pa. Ave.
Los Angeles 23, Calif.—John A. Batchelor Co., 2852 E. 11th St.
Louisville, Ky.—Orr Safety Equip. Co., 300 Main St.
Milwaukee 12, Wis.—Norton, Inc., 3876 N. Port Washington Ave.
New Orleans, La.—Standard Supply & Hardware Co., 822-826 Tchoupitoulos St.
Norfolk 1, Va.—Empire Mach. & Supp., 409 E. Water St.
Oakland 7, Calif.—Pacific Tool & Supply Co., 251-261 Eighth St.
Pittsburgh 26, Pa.—Cobb Wire & Rope Supply Co., 501 McNeilly Rd.
Pittsburgh 30, Pa.—L. B. Foster Co., Inc., P. O. Box 1647
Pittsburgh, Pa.—Penna. Sling Co., 501 McNeilly Rd.
Pittsfield, Mass.—Pittsfield Supply Co., 501 North St.
Portland 8, Ore.—Woodbury & Co., 5851 N. Lagoon, Swan Island
San Francisco 11, Calif.—Pedley Knowles Co., 134 Sacramento
Seattle 4, Wash.—Air Mac, Inc., 3838 4th Ave., S.
Toledo, Ohio—West Equip. Co., 1545 E. Broadway.
Waterbury, Conn.—White Supply Co., 297 Thomaston Ave.
York, Pa.—American Chain & Cable Co., 456 E. Princess St.
York, Pa.—Service Supply Co., Box 746, 152 Summer St.

Toronto, Ont., Canada—Geo. Rumbice Co., Inc., Taber & Haas Rds., Rexdale

RIEGEL TEXTILE CORP.
Glove Division
Conover, N. C.
**See ad page 145.

Branch Offices:

Chicago, Ill.—1737 W. Howard St.
Los Angeles, Calif.—923 East 3rd St.
New York, N. Y.—260 Madison Ave.

RIGGS NUCLEONICS CORPORATION
135 W. Magnolia Blvd., Burbank, California

Distributors:

Chicago 40, Ill.—Electronic Aides, 1105 West Lawrence
Detroit 27, Mich.—Ben Z. Rubin Co., 12838 Fenkell Ave.
Fort Worth, Tex.—T. W. Ecklund Co., P. O. Box 12151
Hampton Village, Towson 4, Md.—William B. Jones Co., 1107 Echo Court North
King of Prussia, Pa.—S & S Associates, 780 W. De Kalb Pike
New York 17, N. Y.—Tower Sales Eng. Co., P. O. Box 3146
Seattle 8, Wash.—N. R. Schultz Co., 4227 Airport Way
Syracuse, N. Y.—John B. Lightstone, 515 Comstock Ave.
Willowdale, Ontario, Can.—Allan Crawford Assoc., 5590 Yonge St.

RIPPLE SOLE CORPORATION
28 W. Adams Avenue, Detroit 26, Mich.
**See ad page 186.

ROBBINS & MYERS, INC.
1345 Lagonda Ave., Springfield, Ohio

Branch Offices:

Chicago 41, Illinois—5517 W. Montrose Ave.
Cleveland 15, Ohio—3030 Euclid Ave.
New York 7, New York—57 Murray St.
(Philadelphia) Upper Darby, Pa.—8418 W. Chester Pike

Distributors:

Dallas 7, Tex.—G. R. Haley, 2514 Irving Blvd.
Houston 19, Tex.—R. E. Boswell, 1107 Rosine St.
Memphis 17, Tenn.—Tom B. Jones, 4711 Poplar Ave.
New Orleans, La.—O. E. Barron, 621 Commercial Pl.
San Francisco, Calif.—C. W. Boswell, 531 Jessie St.
Tulsa 9, Okla.—M. B. Sherman, 5138 S. Peoria

ROCHESTER GERMICIDE COMPANY
333 Hollenbeck St., Rochester 21, N. Y.

Branch Offices:

Chicago 10, Ill.—429 W. Superior St.,
Cincinnati 18, Ohio—Greenhills P. O. Box 61, Eswin Bldg.
Cleveland 2, Ohio—5700 Detroit Ave.
Des Moines, Iowa—2119 West 70th St.
Detroit 11, Mich.—2779 E. Grand Blvd.
Indianapolis, Ind.—2735 East 38th St.,
Kansas City, Mo.—2201 Grand Ave.
Malden 48, Mass.—25 James St.
New Orleans, La.—319 N. Diamond St.
Palisades Park, N. J.—239 Commercial Ave.
Philadelphia 33, Pa.—Wayne-American Bldg., Lehigh Ave. & 3rd St.
Pittsburgh 3, Pa.—29 S. Diamond Sq.
St. Paul 4, Minn.—1418 Carroll Ave.
University City, Mo.—8678 Olive St. Road

Distributors:

Atlanta, Ga.—Fulton Paper Co., 223 Spring St.
Covina, Calif.—O. S. Grove Co., Box 134
Dallas, Texas—H. A. Fraser, Co., 1504 Argentina Dr.
Denver, Colorado—American Sanitary Prod. Co., 2301 Blake St.
Petersburg, Fla.—W. C. Swan, Co., 3126 33rd Ave., N., St.
San Mateo, Calif.—E. P. Gilsdorf, & Co., Box 795
Washington, D. C.—S. Freedman, & Sons, 618 "K" St., N. W.

ROCHESTER SAFETY EQUIP. CO., INC.
83 Howell St., Rochester 7, N. Y.
**See ad page 225.

Branch Offices:

Rochester 7, N. Y.—Rochester Fire Equipment Co., 85 Howell St.

ROCKWOOD SPRINKLER CO.
38 Harlow St., Worcester 5, Mass.
**See ad pages 243 and 118.

Branch Offices:

Boston, Mass.
Buffalo, N. Y.
Charlotte, N. C.
Chicago, Ill.
Cincinnati, Ohio
Cleveland, Ohio
Detroit, Mich.
Grand Rapids, Mich.
Houston, Texas
Indianapolis, Ind.
Los Angeles, Calif.
Memphis, Tenn.
Milwaukee, Wis.
Minneapolis, Minn.
New Orleans, La.
Newark, N. J.
New York, N. Y.
Oshkosh, Wis.
Philadelphia, Pa.
Phoenix, Ariz.
St. Louis, Mo.
San Mateo, Calif.

In Canada: Worcester-Rockwood Ltd., Montreal, Quebec.

ROSE MFG. CO.
2700 W. Barberry Place, Denver 4, Colo.
**See ad page 178.

RUEMELIN MANUFACTURING COMPANY
3085 No. Palmer Street, Milwaukee 12, Wisconsin

Distributors:

Los Angeles 21, Calif.—Richter Engineering Co., 2311 E. 8th St.
New York 4, N. Y.—N. S. Dickinson, Inc., 15 Park Row
Newark 2, N. J.—Engineering Service Co., 43 Lincoln Park
San Francisco 3, Calif.—Leitch & Co., 971 Howard St.

Toronto 4, Canada—Ritchey Supply Co., 226 Geary Ave.

RYDSON PRODUCTS COMPANY
Noise Control Division
8747 S. Greenwood Ave., Chicago 19, Ill.

Distributors:

Indianapolis 6, Ind.—Hugh J. Baker & Co., 602 W. McCarty St.
Los Angeles 22, Calif.—Durand Door Supply, Inc., 6445 Fleet St.

Montreal 6, Can.—Project Sales, Ltd., 4206 St. Catherine St. W.

SABRIN PRODUCTS COMPANY
5511 Euclid Ave., Cleveland 3, Ohio

Distributors:

Avoca, New York—Robin W. Adair Co. Inc.
Los Angeles 1, Calif.—Bennett-Bowen Co., 7779 Compton Ave.
Milwaukee, Wisconsin—O. O. Baddeley, 5019 W. Galena St.
Saginaw, Mich.—National Safety Products Co., 116 N. Hamilton St.

SAFEGUARD BRAKE VALVE COMPANY
610 South Vail Avenue, Montebello, California

SAFEGUARD MANUFACTURING COMPANY
P. O. Box 35, Woodbury, Connecticut

Distributors:

Chicago 39, Ill.—Universal Safety Equip. Co., 5115 W. Diversey Ave.
Peoria, Ill.—Standard Industrial Prod. Co., 920 N. Garfield Ave.
San Jose, Calif.—Die-Supply Div. of E. W. Bliss Co., 7th & Commercial Streets

SAFE-LAD MANUFACTURING COMPANY
1033 S. E. Ash Street, Portland 14, Oregon

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

SAFETY BOX TOE CO.
617 Statler Bldg., Boston, Mass.
**See ad inside front cover.

SAFETY CLOTHING AND EQUIPMENT COMPANY
1990 East 69th, Cleveland 3, Ohio

SAFETY EAR PROTECTOR COMPANY
5330 W. Washington Blvd., Los Angeles 16, Calif.

SAFETY FIRST PRODUCTS CORP.
175 Saw Mill River Rd., Elmsford, N. Y.
**See ad page 249.

SAFETY FIRST SHOE CO., Inc.
Water Street, Millliston, Massachusetts

Distributors:

Ansonia, Conn.—Samuel J. Liftig, Inc., 40 Platt Street
Buffalo N. Y.—American Allsafe, 1245 Niagara Street
Lincoln Park, Mich.—Almco Industrial Supplies, 1457 Dix
Louisville 10, Kentucky—Orr Safety Equipment Co., 1951 So. 10th St.
Minneapolis 6, Minn.—Viking Safety Products, Inc., 3431 E. 25th St.
Orange, N. J.—IPCO Safety Products Co., 400 So. Jefferson
Philadelphia 34, Pa.—Quaker City RR Sales Co., 3207 Kensington Ave.

SAFETY FIRST SUPPLY COMPANY
425 Magee St., Pittsburgh 19, Pennsylvania
**See ad page 146.

Branch Offices:

Charleston 1, W. Va.—1104 Quarrier St.
Cleveland 9, Ohio—4251 W. 35th St.
Toledo 10, Ohio—858 W. Delaware Ave.
Wheeling, W. Va.—47 Garland Ave.

SAFETY FLOOR PRODUCTS
3038 West 84th Place, Chicago 52, Illinois
**See ad page 66.

SAFETY PLUG LOCK CORPORATION
1270 Broadway, New York 1, New York

Distributors:

Bainbridge, Georgia—I. Kwilecki's Sons, Inc.
Baltimore 17, Md.—Automotive Servicenter, 1510 Whitlock Street
Berkeley 2, Calif.—The Attic, 1605 San Pablo Avenue
Brooklyn 23, N. Y.—Macon Electric Spec. Co., 337 Kings Highway
Chicago 8, Ill.—Ace Hardware Corp. 2355 S. Blue Island Ave.
Chicago 12, Ill.—States Supply Co., 2300 W. Warren Blvd.
Danville, Virginia—Womack Electric Supply Co., 518 Newton Street
Hartford 3, Conn.—Haley of Hartford, 100 High Street
Jackson, Michigan—Smith-Winchester Co.
Lockland 15, Ohio—Carlson Hardware, Inc., 109-121 S. Wayne Ave.
Los Angeles 54, Calif.—Gough Ind. Inc., 819 East First St.
Los Angeles, Calif—Topp Sales, 2456 W. Washington Blvd.
Meriden, Conn.—Church & Morse, Inc., 41-49 South Colony St.
Minneapolis 3, Minn.—Warner Hardware Co., 1423 Hennepin Ave.
New York 2, N. Y.—Beacon Sales Co., 195 Bowery
New York 21, N. Y.—Edwards Wise Electric, 514 East 73rd St.
New York, N. Y.—Grossman Electric Co., 33 Union Square
New York 60, N. Y.—Hardware Distr., Inc., 1769-79 Boone Avenue
Philadelphia 6, Pa.—Austrian Lamp Co., 140 N. Second Street
Philadelphia 23, Pa.—Fox Electric Supply Co., 928 W. Girard Ave.
St. Louis, Mo.—JWF House wares, Inc., 10900 Page Blvd.
San Antonio 6, Texas—Watt Hardware Supply Co., P. O. Box 659
San Bernardino, Calif.—Rose Auto Supply, 208 E. Street
San Jose, Calif.—McMullins, 522 So. Bascom Ave.

Toronto 3, Canada—Cords (Canada) LTD., 149 Sterling Road

SAFETY TOWER LADDER COMPANY, INCORPORATED
1224 Burbank Blvd., Burbank, California

Distributors:

Largo, Fla.—Car Mad Safety Equipment, Inc., 570 No. Indian Rocks Rd.
Honolulu, Hawaii—Gaspro, Ltd., 2305 Dillingham Blvd.
New York 22, N. Y.—Dunbar A. Eberts, 13 East 53rd Street

Milan, Italy—I. Co. Ma., Milano (222) Via Rugabella 11
Toronto, Ontario, Canada—W. S. Gerrie & Assoc., Ltd., (Div. of Pioneer Electric Eastern, Ltd.) 12 Audley Street

SAGER GLOVE CORPORATION, THE
1672 N. Claremont Avenue, Chicago 47, Illinois

SALISBURY, W. H., & COMPANY
401 N. Morgan Street, Chicago 22, Illinois

Distributors:

General Electric Supply
Graybar Electric Co.
Line Material Industries
Westinghouse Electric Supply
Located in principal cities

SANI-MIST, INC.
1724 Chestnut, Philadelphia, Pa.
**See ad page 93.

SAROLE, INCORPORATED
228 North Wood Avenue, Linden, New Jersey

Distributors:

College Point, N. Y.—G. Roland Lawton Co., 121-14 14th Rd.
Joliet, Ill.—Joliet Marine Supply, 63 N. Desplaines St.
Los Angeles, Calif.—B. F. McDonald, Co., 5721 W. 96th St.
Stony Point, N. Y.—Wm. Charters

SAWYER-TOWER, INCORPORATED
Stanley Avenue, Watertown 72, Massachusetts

SCHRADER'S, A., SON, INC.
470 Vanderbilt, Brooklyn, N. Y.

SCOTT AVIATION CORPORATION
211 Erie Street, Lancaster, New York
**See ad page 131.

Branch Offices:

Branches in all principal cities
Studio City, California—Fulton-Ventura Building, 13273 Ventura Blvd.

Distributors:

Albany, N. Y.—Tech Supply Co., 52 South Hawk Street
Anchorage, Alaska—Alaska Welding Supplies, Inc., P. O. Box 677
Atlanta Ga.—Southeastern Safety Appliances, 730 Miami Circle, N. E.
Belleville, N. J.—Standard Safety Equip., Co., 13 Heckel St.
Beloit, Wis.—Fire Equipment Co., 925 St. Lawrence Ave.
Birmingham, Ala.—Safety Engineering & Supply Co., P. O. Box 1648
Boston, Mass.—American Fire Equip. Co., 717 Royiston St.
Boston, Mass.—General Equip. Corp., 261 Franklin St.
Bridgeport, Connecticut—Bridgeport Industrial Prod., 22 Cross St.
Bridgewater, Mass.—Joseph L. Murphy, 15 School St.
Buffalo, N. Y.—American Allsafe Co., Inc., 1245 Niagara Street
Buffalo, N. Y.—The Watson Co., 1362 Kenmore Avenue
Buffalo, N. Y.—Young Fire Equip. Corp., 1548 William at Bailey
Chicago, Ill.—Protective Equip. Co., 634 North Orleans St.
Columbus, Ohio—Ohio Safety Products Co., 528 Seymour Ave.
Corpus Christi, Texas—Southwest Equip. & Extinguisher Co., 526 Palm Drive
Dallas, Texas—Engineering Supply Co., 6000 Denton Drive
Dallas, Texas—Settle Safety Supply Co., P. O. Box 9826
Dayton, Ohio—Dayton Safety Supply Co., 11 Longworth Street
Denver, Colo.—Safety Equip. Co., 1630 Seventeenth Street
Denver, Colo.—Union Supply Co., 5480 Colorado Blvd.
Detroit, Mich.—Seco Safety Prod. Co., 4461 W. Jefferson Ave.
Detroit, Michigan—Sterling H. Dackson, 5285 E. Outer Drive
Duluth, Minn.—W. P. & R. S. Mars Co., 324 W. Michigan St.
East Orange, N. J.—Hotte Safety Appliances, 340 North Park St.
El Paso, Texas—Jay L. Harman Fire Equip. Co., P. O. Box 34
Fort Wayne, Ind.—Safety Equip. & Supply Co., 1724 W. Main St.
Hamden 5, Conn.—O. B. Maxwell Co., Inc., 62 Sagley St.
Harmony, R. I.—George C. Adams, Box 53
Hartford, Conn.—Industrial Safety Supply, Inc., 574 New Park Ave.
Honolulu, Hawaii—Gaspro, Ltd., Box 2454
Hortonville, Wisconsin—Mel Ray
Houston, Tex.—Guardian Safety Equip. Co., P. O. Box 13384
Hyde Park, N. Y.—Nichols Oxygen, East Park Road
Indianapolis, Ind.—Indiana Fire Prevention Co., 545 S. East St.
Kalamazoo, Mich.—Safety Services, Inc., 1903 W. Main Street
Knoxville, Tenn.—Safety Equip. Distributing Co., 832 West Main St.
Lafayette, La.—Delta Fire & Safety, Inc., Box 1669, Oil Center Sta.
Long Island City 1, N. Y.—W. S. Wilson Corp., 47-50 30th Street
Los Angeles, Calif.—Dickson Safety Products Co., 12921 W. Washington Blvd.
Louisville Ky.—Orr Safety Equip. Co., 1951 S. Tenth St.
Marinette, Wis.—Queen City Supply Co., P. O. Box 372
Medfield, Mass.—Charles H. Clougherty, 39 Miller St.
Memphis, Tenn.—Delta Oxygen Co., Inc., 611 Court Avenue
Minneapolis, Minn.—Fire Protection Sales Co., 3107 Penn Ave., N.
Minneapolis, Minn.—Minnesota Fire Equip. Co., 2409 Hennepin Ave.
Minneapolis, Minn.—Viking Safety Prod., Inc., 3431 East 25th St.
North Billings, Mont.—Big Horn Supply, Inc., Box 2036
Pearl River, N. Y.—George H. Bartels Co., P. O. Box 147
Philadelphia, Pa.—Guardian Safety Equip. Co., 214 South 45 St.
Phoenix, Arizona—Thunderbird Sales Corp., 2255 W. McDowell Rd.
Pittsburgh, Pa.—Safety First Supply Co., 425 Magee Street
Portland, Oregon—Munnell & Sherrill, Inc., 1163 Northeast 63 Ave.
Roanoke, Va.—Jones Welding Supplies, 229 Eleventh St., S. E.
St. Louis, Mo.—Safety, Inc., 3230 Olive Street
St. Marys, Pa.—C. H. Yetzer & Son, 1 Fleming Avenue
San Diego, Calif.—Bailey Equip. Co., Inc., 3836 California Street
Salt Lake City, Utah—Universal Safety & Fire Equip., P. O. Box 1587
Sausalito, Calif.—E. D. Bullard Co., 2680 Bridgeway
Seattle, Wash.—L. N. Curtis & Sons, 1108 Westlake Ave., N.
Seattle, Wash.—Safety & Supply Co., 119 Blanchard Street
Springfield, Mass.—David G. Dame, 104 Washington Road
Syracuse, N. Y.—Syracuse Safety Services, 1108 Spring Street
Troy, N. Y.—B-Lawn Equipment Co., 2299 Fifth Avenue
Tulsa, Okla.—Guardian Safety Equip. Co., 1742 S. Main St.
Utica, N. Y.—Link Fire Equip. Service, 1415 Lincoln Avenue
Washington, D. C.—Southern Oxygen Co., P. O. Box 5087
Winthrop, Maine—Blanchard Associates, Inc.
Zanesville, Ohio—Fire Equip. & Welding Supply, 731 Main St.

Toronto, Ontario, Canada—Safety Supply Co., 214 King St., E.

Export Division:

New York 19, N. Y.—Southern Oxygen Co., 23 West 57th Street

SCOTT, H. H., INCORPORATED
Instrument Division
111 Powder Mill Rd., Maynard, Massachusetts

Representatives:

Carlisle, Mass.—W. M. Hague Co.
Chicago 13, Ill.—Karet-Margolis, Inc., 1803 W. Belle Plaine Ave.
Cleveland, Ohio—Martin-Retiger, Inc., 11955 Shaker Blvd.
Decatur, Ga.—V. Avis McCorvey, Co., 215 Church St.
Los Angeles, Calif.—W. K. Geist, Co., 3177 Glendale Blvd.
New York 13, N. Y.—Crane & Egert, Corp., 97 Reade St.
Seattle, Wash.—Ray Johnston, Col, 1011 E. 69th St.
Warren, Mich.—Electro-Nation Assoc., 4012 E. Nine Mile Rd.
Webster Groves, Mo.—Robert Shaw, 7800 Kenridge Lane

Export Division:

New York, N. Y.—Telesco International Corp., 36 W. 40th St.

SCOVILL MFG. CO.
99 Mill St., Waterbury 20, Conn.
**See ad page 163.

SEARJEANT METAL PRODUCTS, INC.
P. O. Box 74, Meadon, N. Y.

Distributors:

Distributors located in all principal cities throughout the U. S. and Canada.

SECO SAFETY PRODUCTS COMPANY
4461 West Jefferson, Detroit 9, Michigan

SECURITY CONTROLS, INCORPORATED
503 Franklin Street, Buffalo 2, N. Y.

SEIBERLING LATEX PRODUCTS COMPANY
New Bremen, Ohio
**See ad page 186.

SEISMOGRAPH SERVICE CORP.
Seiscor Division
Box 1590, Tulsa, Okla.
**See ad page 120.

SELLSTROM MANUFACTURING COMPANY
Highway 53 at U. S. 14, Palatine, Illinois
**See ad page 125.

Distributors:

Albany, N. Y.—Albany Welding Supply Co., 20 Center St.
Albuquerque, N. M.—Big Three Welding Supply Co., 4318 2nd St.
Anniston, Ala.—Alex Rowell Supply Co., Inc., P. O. Box 948
Atlanta, Ga.—Marks Oxygen Co., 762 Stewart Ave., S. W.
Auburn, Me.—Maine Oxy-Acetylene Supply Co., Adams St.
Augusta, Ga.—Marks Oxygen Co., New Savannah Rd., Box 638
Austin, Tex.—Big Three Welding Equip. Co., P. O. Box 6098
Bakersfield, Calif.—Bakers Welding Supply Co., Box 3336, 2121 16th St.
Baton Rouge, La.—Louisiana Welding Supply Co., 1931 Plank Rd.
Beaumont, Tex.—Big Three Welding Equip. Co., 4895 Port Arthur Rd.
Belleville 7, N. J.—Standard Safety Equip. Co., 13 Heckle St.
Birmingham, Ala.—Post Welding Supply Co., P. O. Box 2111
Bluefield, W. Va.—Pocahontas Welding Supply Co., P. O. Box 1256
Borger, Texas—Big Three Welding Supply Co., 616 Phillips Rd.
Buffalo, N. Y.—Regis H. Voye Co., 385 Parker Ave.
Cedar Rapids, Iowa—Kacena Co., 829 2nd Ave. S. E.
Charleston, S. C.—Industrial Welding Supplies, Inc., 980 E. Bay St.
Charleston, W. Va.—Virginia Welding Supply, 114-116 Virginia St. East
Chattanooga, Tenn.—Brooks Welding Co., 700 Manufacturers Rd.
Chicago, Ill.—Central Welding & Equip. Co., 5311 W. Diversey
Chicago 3, Ill.—R. W. McNeilly, Co., 30 W. Monroe St.
Cleveland 10, Ohio—Standard Safety Equip. Co., 655 E. 152nd St.
Columbia, S. C.—Industrial Welding Supplies, Inc., 1209 Wayne St.
Corpus Christi, Tex.—Big Three Welding Equip. Co., P. O. Box 1896
Cumberland, Md.—Wilson Welding Supply Co., P. O. Box 87
Dallas, Tex.—Welders Supply Inc., 430 S. Industrial
Danville, Ill.—Depke Welding Supplies, Inc., 638 E. Williams
Dayton, Ohio—Mineweld Co. of Indiana Inc., 1245 McCook Ave.
Denver 1, Colo.—W. L. Foss, Inc., 1901 Arapahoe St.
Denver, Colo.—U. S. Welding Works Co., Inc., 1301 Walnut St.
Detroit, Mich.—Kindy Optical Co., 9233 Grand River Ave.
Duluth, Minn.—Kindy Optical Co., 5 W. Superior St.
Elkton, Md.—Fire Prevention Co., 511 Hollingsworth Ave.
Elmwood 10, Conn.—Whitney Tool & Supply Co., 85 Prospect Ave.
El Paso, Tex.—Big Three Welding Supply Co., 1830 E. Paisano Dr.
Farmington, N. M.—Big Three Welding Supply Co.
Fort Dodge, Iowa—Rock Bros. Welding Supply, Box 292
Fort Worth, Tex.—Big Three Welding Supply Co., P. O. Box 1538
Franklin Park, Ill.—Production Supplies, Inc., 9490 Franklin Ave.
Gary, Ind.—Calumet Welders Supply, 1122 Virginia St.
Grand Forks, N. D.—Dow Supply Co.
Green Bay, Wis.—W. A. Vorpahl, Co., P. O. Box 847, 1148 Velp Ave.
Hattiesburg, Miss.—Gulf Welding Equip. Co., 212 Broadway Dr.
Houston, Tex.—Big Three Welding Equip. Co., P. O. Box 3047
Indianapolis 22, Ind.—Mineweld Co., of Indiana, Inc., 2001-09 W. Washington St.
Iron Mt., Mich.—Standard Service & Supply Co., Kent & Stephenson
Jackson, Mich.—Jackson Welding Supply Co., 204 Homewild Ave.
Jacksonville, Ill.—Ill-Mo. Products Co., 555 Sandusky
Jacksonville, Fla.—Georgia Supply Co., 821 E. Bay St.
Kalamazoo 5, Mich.—Kindy Optical Co., 323 S. Burdick
Kansas City 6, Mo.—Welding Equip. Supply Co., Inc., 920 Truman Rd.
Kenosha, Wis.—Kelsey Welding & Engineering Co., 6915 30th Ave.
Kingsport, Tenn.—Oxygen Service Co., 509 E. Main
Knoxville, Tenn.—Tennessee Welding Supply Co., Morelia Ave. & N. Central Ave.
Kokomo, Ind.—Wortman Welding Supply, 215 S. Main St.
LaCrosse, Wis.—Randall Graw Co. Inc., 1007 Monitor St.
Leesport, Pa.—Delaware Valley Safeguards Co., 400 Nichols St.
Lexington, Ky.—Kentucky Welding Supply Co., 525 Corral St.
Lima, Ohio—Mineweld Co. of Ind., Inc., 944 S. Elizabeth St.
Little Rock, Ark.—Welders Supply Co., 800 E. Roosevelt Rd.
Longview, Tex.—Big Three Welding Supply Co., 1107 Gladewater Rd.
Los Angeles, Calif.—Dickson Safety Products Co., 12921 W. Washington Blvd.
Louisville, Ky.—General Welding Equip. Co., 2603 S. Floyd St.
Louisville, Ky.—Robert L. Schmidt Co., 306 E. Main St.
Lubbock, Tex.—Big Three Welding Supply Co., 2406 Erskine Rd.
Lynchburg, Va.—Barker-Jennings Co., 1001 Commerce St.
Marinette, Wis.—Interstate Welding Sales Co., 1180 Marinette Ave.
Marion, Ind.—Butterworth Co., 108 S. Washington St.
Mason City, Iowa—Barclay Co., 216 2nd St., S. W.
Memphis 4, Tenn.—Standard Welders Supply Co., 363 Walnut St.
Milwaukee, Wis.—Kindy Optical Co., 615 N. 3rd St.,
Minneapolis, Minn.—Elvin First Aid Supply Co., 327 2nd Ave., No.,
Mobile, Ala.—Mobile Welding Supply Co., Washington at Canal
Monroe, La.—Shaw Oxygen Co., Box 581
Montgomery, Ala.—Montgomery Welding Supply Co., 950 Bell St.,
Muskegon, Mich.—Kindy Optical Co., 302 W. Western Ave.
Nashville 10, Tenn.—Price-Bass Co. Inc., 395 Hermitage Ave.
New Orleans, La.—Gulf Welding Equip. Co., P. O. Box 495
Norfolk 10, Va.—Hampton Roads Welders Supply Co., Inc., 21st St. at Woddorw Ave.
Oak Park 37, Mich.—Speidel Safety Service 22150 Westhampton
Odessa, Tex.—Big Three Welding Supply Co., 2504 W. 2nd St.
Omaha, Neb.—Kindy Optical Co., 107 S. 16th St.
Orange, N. J.—Ipco Safety Products Co., 400 S. Jefferson St.
Oshkosh, Wis.—Sommerfeld Welders Supply Co., N. Jackson Dr.
Ottumwa, Iowa—Valley Supply Co., 1200 W. 2nd
Paducah, Ky.—Paducah Iron Co., 229-233 S. 1st St.
Palatine, Ill.—Standard Safety Equip. Co., 431 N. Quentin Rd.
Pasco, Wash.—Pasco-Yakima Welders Supply Co., Division, Northwest Oxygen, 513 W. Court St.
Pekin, Ill.—H. R. McGarvey, 304 Margaret
Pensacola, Fla.—Pensacola Welding Supply Inc., Wright at Davis
Phoenix, Ariz.—Dye Oxygen Co., Inc., P. O. Box 6276
Pittsburgh 16, Pa.—Protective Clothing Co., P. O. Box 8076
Pontiac, Mich.—Kindy Optical Co., 15 N. Saginaw
Portland 9, Oregon—Davis Industrial Prod. Co., 350 N. W. 6th Ave.
Prestonburg, Ky.—R. V. May, Co.

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

Raleigh, N. C. –Carolina Welding Supplies Inc., 801-803 N. West St.
Redding, Calif. –Gerlinger Steel & Supply, 1527 Sacramento St.
Reno, Nev. –Sierra Oxygen Co., 1500 E. 2nd St.
Richmond 19, Va. –Watkins Welding Supply Co., 1548 E. Cary St.
Roanoke, Va. –Wrights, 2036 Laburnum Ave., S. W.
Rochester, Minn. –Gopher Welding Supply Co., 119 4th St. S. W.
Rockford, Ill. –Welders Supply Co., 806 Broadway
Sacramento 14, Calif. –Moore's Welding Supply, 1117 "G" St.
St. Louis, Mo. –Rasco, Inc., 4565 DeTonty
St. Paul, Minn. –Kindy Optical Co., 22 E. 7th
Salina, Kan. –Brown Welding Supply Co., 7th & Elm
Salt Lake City, Utah –Goodall Rubber Co., 631 S. 2nd West
San Antonio, Tex. –Big Three Welding Equip. Co., P. O. Box 2224
San Diego, Calif. –G. S. Parsons Co., 3211 India St.
San Francisco, Calif. –Absco, Inc., 826 Folsom
Seattle 8, Wash. –Welders Supply Co., 4000 7th Ave.,
Shreveport, La. –Peerless Supply Co., 701 Spring St.
Sioux City, Iowa–Monroe Welding Supply Co., 212 Fairmount
Spokane, Wash. –Northwest Oxygen Co., West 1021 Broadway
Springfield, Mo. –Ozark Welding Supply Co., 3016 W. Highway 66
Stockton 14, Calif. –Hicksbotham Bros., Ltd., 536 S. Aurora St.
Syracuse, N. Y. –American Allsafe Co., 1224 Erie Blvd. E.
Tampa 5, Fla. –Gen. Welding Supply Co., Adamo Dr. & 22nd St.
Terre Haute, Ind. –Mineweld Co. of Indiana, Inc., 1339 N. 13th St.
Toledo 4, Ohio–Toledo Oxygen & Equip. Co., 1310 Elm St.
Topeka, Kan. –Knoll Welding Supply, 225 Jackson Blvd.
Tulsa, Okla. –Okla. Oxygen Co., 2750 Sand Springs Rd., P. O. Box 910
Waterloo, Iowa–Newkirk Sales Co., 417 W. 5th St.
Watertown, S. D. –Dakota Welding Supply Co., Hwy 212 & E. 11th St.
Waukegan, Ill. –Caldwell Mill Supplies, Inc., 105 Greenwood Ave.
Wichita, Kan. –Lampton Welding Supply Co., 601 N. Washington
Winston-Salem, N. C. –Edmac, Inc., 1015 N. Liberty St., P. O. Box 1008
Worland, Wyo. –Worland Oxygen Co., 404 N. Railroad Ave.
Zanesville, Ohio–Fire Equip. & Welding Supplies, 731 Main St.

Bogota, Columbis, S. A. –Fabrica National de Oxigena Y, Apartado Aera 3624, Calle 13 #37-16
Caracas, Venequela, S. A. –Venezuelan Supply C. A., Apartado 1871
Chihuahus, Mexico–Oxigeno De Chihuahua, Apartado 318
Ciudad Trujillo, Dominican Republic–Ramca, C, por A., 30 de Marzu No. 139
Curacao, Netherlands-Antilles–Curacao Hdwe. Co., N. V., P. O. Box 26
El Salvador, Central America–Comsa Servicios-Mecanicos Y Marlinos, Calle-Chile 6-A Apartado 937, San Salvador
Guadalajaia, Mexico–Cia Productora De Oxigens
Guayaquil, Ecuador, S. A. –Corporacion Ecuatoriana Europea, S. A., Casilla 3997
Kingston, Jamaica, B. W. I. –L. C. McGibbon Co., 140½ Orange St.
La Habana, Cuba–Compania De Oxigeno Havana, S. A., Apartado 2869 Mayo 1175 Pte.
Lima, Peru, S. A. –Distribuidora Interamericana, S. P., P. O. Box 4217
Mexico 1, D. F., Mexico–Electrodas Monterrey, S. A., Apartado 723
Monterrey, N. L., Mexico–Argon De Monterry, Apartado 318, 5 De
Montreal 24, Can. –Industrial Safeguards Co., 955 Amherst St.
Nicaragua, C. A. –Julio Martinez, Apartado #74 Managua,
Panama City, Republic of Panama–Alfaro, A. J., P. O. Box 1211
Ponce, Puerto Rico–El Cometa, P. O. Box 2030
Port-au-Prince, Haiti–Powell's Industrial Works, S. A., Box 426
Rio de Janeiro, Brazil, S. A. –S. A. White Martins, Rua Benedittons 1A 7, P. O. Box 495
Saltillo, Mexico–Gases y Electrodes
San Juan 10, Puerto Rico–Abarca Warehouses Corp., P. O. Box 2352
San Juan, Puerto Rico–Juan Marina Garcia, Inc., P. O. Box 4526
Santiago de Chile, S. A. –Compania Chilena Aga S. A., Casilla 2738
Tegucigalpa, D. C. Honduras, C. A. –Maquinaria Y Accesorios, S. A., Box 333
Torreon, Mexico–Gases y Electrodes
Vancouver, B. C., Can. –Acetogen Welding Supplies Ltd., 1339 Franklin St.
Victoria, B. C., Can. –Rogers Welding Supplies, Ltd., 1119 Wharf St.
Zona 1, Guatemala City, Guatemala, C. A. –Manuel S. Ayau Sucs., 15 Avenido 10-53

SERON MANUFACTURING COMPANY
Barber Bldg., Joliet, Illinois
**See ad page 124.

SETLOW, M., & SON, INC.
P. O. Box 1784, New Haven 7, Conn.
**See ad page 158.

Distributors:

Ansonia, Conn. –Samuel J. Liftig, Inc., 40 Platt St.
Barrington, N. J. –Wilkie Optical, Inc., Shreve Ave., & N. J. Tpk.
Buffalo, N. Y. –Prince Rubber & Plastics Co., 1675 Niagara St.
Buffalo, N. Y. –Steinwach's Safety Supply, 1573 S. Park Ave.
Chicago, Ill. –Scientific Industrial Supply Co., 2985 S. Vernon Ave.
Cleveland, Ohio–Safety Clothing & Equip. Co., 1980 E. 69th St.
Cleveland, Ohio–Safety Engineering & Appliance Co., 1704 Spring Rd.
Dayton, Ohio–Dayton Safety Supply Co., 316 Longworth St.
Detroit, Mich. –Seco Safety Prod., 4461 W. Jefferson St.
Fort Wayne, Ind. –Safety Equip. & Supply Co., 1724 W. Main St.
Garfield, N. J. –Firematic & Safety Equip. Co., 463 River Dr.
Knoxville, Tenn. –Safety Equip. Dist. Co., 832 W. Main St.
Louisville, Ky. –Orr Safety Equip. Co., 300 E. Main St.
New Haven, Conn. –Abern Safety Equip. Corp., 2 Eld St.
Orange, N. J. –Guardian Safety Equip. Co., 400 S. Jefferson St.
Philadelphia, Pa. –General Scientific Equip. Co., Box 3098
Philadelphia, Pa. –Guardian Safety Equip. Co., 214 S. 45th St.
Philadelphia, Pa. –Industrial Prod. Co., 2820 N. 4th St.
Pittsburgh, Pa. –Science House, Inc., 1294 Raven Dr.
Port Chester, N. Y. –Union Industrial Equip. Corp., 40 Beach St.
St. Louis, Mo. –Safety, Inc., 2608 Olive St.
Sausalito, Calif. –E. D. Bullard Co., 2680 Bridgeway Blvd.
Tulsa, Okla. –Guardian Safety Equip. Co., 1742 S. Main St.
Waterbury, Conn. –Industrial Sales Corp., 196 Mill St.

SIGMA ENGINEERING CO.
1608 Hillhurst Ave., Los Angeles 27, Calif.
**See ad page 101.

Distributors:

Cheltenham, England–R. W. Sutton, Ltd., 7 Lansdown Pl.
Melbourne, Australia–Greenson Pty. Ltd., 110 Little Bourke St.

SILICONE PAPER COMPANY OF AMERICA INCORPORATED, THE
230 Park Avenue, New York 17, New York
**See ad page 119.

SILVER, FRED, INC.
92 Lock St., Newark, N. J.
**See ad page 47.

SIMONIZ CO.
2100 Indiana Ave., Chicago 16, Ill.

SINGER GLOVE MANUFACTURING COMPANY
860 W. Weed Street, Chicago 22, Illinois
**See ad page 142.

SKILL CORPORATION
5033 N. Elston Ave., Chicago 30, Ill.

Branch Offices:

Atlanta 18, Ga. –1890 Marietta Blvd., N. W.
Baltimore 18, Md. –2323 Greenmount Ave.
Birmingham 4, Ala. –806 N. 5th Ave.
Boston 34, Mass. –151 Cambridge St.
Buffalo 11, N. Y. –570 E. Delavan Ave.
Charlotte 3, N. C. –1815 S. Tryon St.
Chicago 52, Ill. –3259 W. Columbus Ave.
Cincinnati 29, Ohio–1361 Tennessee Ave.
Cleveland 14, Ohio–3038 Payne Ave.
Dallas 26, Tex. –4014 Elm St.
Denver 16, Colo. –4462 York St.
Des Moines 16, Iowa–3629 E. 14th St.
Detroit 21, Mich. –17160 Wyoming Ave.
Houston 3, Tex. –324 N. Hutcheson St.
Indianapolis 2, Ind. –1620 E. Riverside Dr.
Kansas City 8, Mo. –2007 Broadway
Los Angeles 7, Calif. –2730 S. Broadway
Memphis 4, Tenn. –558 S. Cooper St.
Miami 37, Fla. –4220 N. W. 2nd Ave.
Milwaukee 13, Wis. –9209 W. Bluemound Rd.
Minneapolis 6, Minn. –2207 Lyndale Ave. S.
Newark 5, N. J. –611 U. S. Highway #22
New Orleans 15, La. –3501 Tchoupitoulas St.
New York 51, N. Y. –2810 Park Ave.
Oklahoma City 4, Okla. –1535 W. Reno St.
Philadelphia 38, Pa. –2135 Chew Ave.
Phoenix, Ariz. –3123 E. McDowell Rd.
Pittsburgh 1, Pa. –3221 Liberty Ave.
Portland 13, Ore. –5616 N. E. Glisan St.
St. Louis 10, Mo. –1238 S. Vandeventer Ave.
San Diego 10, Calif. –3492 Pickett St.
San Francisco 3, Calif. –285 S. Van Ness Ave.
Seattle 9, Wash. –818 John St.
Spokane 24, Wash. –East 2226 Riverside

SNYDER, M. L., & SON, INC.
1828-88 East Boston Ave., Philadelphia 25, Pa.

Branch Offices:

Los Angeles 37, Calif. –43rd & Broadway
San Francisco 5, Calif. –149 Second St.
St. Louis 6, Mo. –1616 N. 7th St.
Seattle 4, Wash. –71 Columbia St.
Vancouver, B. C., Canada–M. L. Snyder & Son, Ltd., 335-37 Princess Woodbridge, Ont., Canada–Box 660

SPEAKMAN COMPANY
30th & Spruce St., Wilmington 99, Del.
**See ad page 89.

Branch Offices:

Baltimore 18, Md. –Thomas E. Thomas, Apt. A, 3800 Canterbury Rd.
Brookline 46, Mass. –Ralph F. Shoop, 318 Harvard St., Rm. 31
Charlotte 9, N. C. –Nelson P. McClees, 314 Scalybark Rd.
Chicago 11, Ill. –West & Lasley, Inc., Rm. 318, 154 E. Erie St.
Clarence, New York–Wiggins Co., 5120 Bank St.
Clifton, N. J. –John J. Traynor Assoc., Inc., 93 Valley Rd.
Dallas 35, Tex. –Marshall-O'Brien Assoc., 2512 W. Mockingbird Lane
Decatur Ga. –John H. Christian, P. O. Box 3132
Detroit 8, Mich. –Ed DeYoung & Assoc., 5281 Avery
Harrisburg, Pa. –Major C. Smith, P. O. Box 524
Hollywood, Fla. –Merrell L. Poole & Assoc., 1924 N. 25th Ave.
Jacksonville 1, Fla. –Merrell L. Poole & Assoc., P. O. Box 61
Los Angeles 21, Calif. –Blaco, 1410 Santa Fe Ave.
Mars, Pa. –Fred G. Steffens, Union Church Rd., R. D. #2
Milwaukee 8, Wis. –M. F. Krivanek, 5920 W. North Ave.
New Orleans 7, La. –D. E. Ebeling Co., 4132 Mirabeau Ave.
New York 17, N. Y. –Export Office, 60 East 42nd St.
New York 17, N. Y. –Woods & Woods, Rm. 1733, 101 Park Ave.
Niantic, Conn. –Ralph J. Pinto Co., P. O. Box 525
Oakland 12, Calif. –Clifford Y. Frazer & Assoc., 600 16th St.
Oklahoma City, Okla. –Marshall-O'Brien Assoc., P. O. Box 7355
Peoria, Ill. –West & Lasley, Inc., 3921 N. Millbrook Rd.
Philadelphia 3, Pa. –Wall & Holloway, Inc., 122 S. 22nd St.
Phoenix, Ariz. –John S. Myers, P. O. Box 598
Prairie Village, Kansas–Arthur W. Swenson, Rm. 34 #20 on the Mall
Rensselaer, N. Y. –Ted Smith, P. O. Box 54
Rochester 15, N. Y. –Daniel A. McGuckin, 171 Autumn Dr.
San Antonio 3, Tex. –Watts & Mahan, 416 Santa Clara St.
Seattle 4, Wash. –A. Grant Burr, 115 Atlantic St.
St. Louis, Mo. –Clarence R. Hayes, 10139 Edgefield Dr.
St. Paul 14, Minn. –G. Culver Rugg, Michael C. Rugg, 2147 University Terrace Park, Ohio–Robert Wilson, 616 Marietta Ave.
Trenton, N. J. –John J. Traynor Assoc., Inc., P. O. Box 393

SPECIAL INSTRUMENTS LAB., INC.
312 West Vine Ave., Knoxville 2, Tenn.

Distributors:

Dallas, Tex. –Carl Cassling, Cotton Exchange Bldg.
Knoxville, Tenn. –Spinlab Sales, Inc., 312 W. Vine Ave.
Los Angeles 22, Calif. –E. S. Browning, 2321 Yates Ave.
New York 17, N. Y. –Mundial Export Corp., 70 E. 45th St.
New York, N. Y. –Transmares Corporation, 15 William Street
Ahmedabad, India–Federal India Trading Co., P. O. B. No. 61
Alexanderia, Egypt–Ashour Trading Co., 22, Avenue El Horria
Bangkok, Thailand–The Matt Co., Ltd., 453-455 New Road
Brazil–Sao Paulo, Panambra, S. A.
Buenos Aires, Argentina–M. T. Meadows y Cia., Sarmiento 459
Goteborg, Sweden–Sven Ericsson & Co., Packhusgatan 4B
Istanbul, Turkey–Hans Geelmuyden, Veli Alemdar Han, 202-294
Mexico (1) D. F. –Leo Lenk, Apartado 533
Osaka, Japan–C. Itoh & Co., Ltd., 36 2-Chrome Honmachi
Paris 18, France–Promesur, 19, Rue Eugene Carriere
Taipei, Taiwan, China–Sincerity Development Corp., 41 Hui Ning St.
Tel-Aviv, Israel–L. Kardos, 3 Frug St.

SPECO, INCORPORATED
7308 Associate Avenue, Cleveland 9, Ohio

SPEER-CPL DIVISION
Minerals & Chemicals Philipp Corporation
Menlo Park, New Jersey
**See ad page 60.

Distributors:

Distributors in all principal cities–refer to classified section of the telephone directory.

SPERTI FARADAY INCORPORATED
2011 West Beecher Road, Adrian, Michigan

Branch Offices:

Chicago, Ill. –20 North Wacker Dr., Room 1444
Hoboken, N. J. –720-732 Grand Street
Milwaukee, Wis. –312 E. Wisconsin Ave. Room 208
Philadelphia, Pa. –1635 Race Street
Pittsburgh, Pa. –413 Bessemer Building

ST. JOHN X-RAY LABORATORY
Califon, New Jersey

STANDARD ELECTRIC TIME COMPANY, THE
89 Logan Street, Springfield, Massachusetts

Branch Offices:

Allentown, Pa. –1461 Schoenersville Road
Arlington, Mass. –297 Broadway
Atlanta 12, Ga. –542 Forrest Road, NE
Birmingham, Ala. –608-37 Street, South
Buffalo 17, N. Y. –3411 Delaware Avenue
Chicago, Ill. –5216 W. Diversey Avenue
Columbus, Ohio–Hartman Bldg. 79 E. State St.
Dallas 20, Tex. –2618 Manana Drive
Denver 11, Colo. –5750 Pecos Street
Des Moines 9, Iowa–309 Masonic Temple Bldg., 1011 Locust St.
El Paso, Tex. –Electrical Eng. & Sales Corp., 2030 Texas St.
Fresno, Calif. –1721 E. Harvey Street
Hagerstown, Md. –313 Professional Arts Bldg.
Lathem, New York–Swatling Building
Oak Park 37, Mich. –8440 West Nine Mile Road
Rockville, Conn. –3 Olsen Drive

Distributors:

Houston 4, Tex. –2809 Caroline Street
Indianapolis 5, Ind. –2036 East 46th Street
Jacksonville 3, Fla. –2724 College Street
Kansas City 31, Mo. –1103 East 81st Street
Los Angeles 22, Calif. –5405 Sheila Street
Memphis, Tenn. –774 Adams Avenue
Miami 35, Fla. –E. D. Gruppe Assoc., Inc., 3150 Northwest 7th St.
Milwaukee 13, Wis. –7613 West State Street
Minneapolis 16, Minn. –6106 Excelsior Avenue
Montclair, N. J. –94 Valley Road
New Orleans 22, La. –3901 Clematis Avenue
New York 61, N. Y. –25 Westchester Square
Oklahoma City 6, Okla. –1221 Linwood
Orlando, Fla. –E. D. Gruppe Assoc., Inc., 711 Magnolia Avenue
Pittsburgh 22, Pa. –National Emergency Light Co., Bessemer Bldg.
Portland, Oregon–8655 SW Canyon Road
Richmond, Va. –8544 Patterson Avenue
Sacramento 15, Calif. –1817 Silica Avenue
Salt Lake City 11, Utah–Electro Time & Control Co., 264 E. 1st South
San Francisco 5, Calif. –16 Beale Street
Seattle 5, Wash. –664 East Northlake Avenue
St. Louis 9, Mo. –6414 So. Hampton Avenue
Syracuse 6, N. Y. –2360 James Street
Tampa 3, Fla. –E. D. Gruppe Assoc., Inc., 2903 W. Hillsboro Ave.
Tucson, Ariz. –2030 East Broadway
Washington 5, D. C. –1507 M Street, NW
Wynnewood, Pa. –One Wynnewood Rd.

STANDARD GLOVE COMPANY
13200 Woodworth Rd., Cleveland 12, Ohio

Branch Offices:

Birmingham, Mich. –1950 Latham Drive
Coraopolis, Pa. –6 Elco Drive
Dayton, Ohio–1635 Kipling Drive
Livonia, Mich. –28252 Terrence Drive
Richmond, Ind. –821 N. W. "B" St.

STANDARD INDUSTRIAL PRODUCTS COMPANY
3527 Farmington Road, Peoria, Illinois
**See ad page 188.

Distributors:

Buffalo, N. Y. –Steinwach Safety Supply, 1573 S. Park Ave.
Chicago, Ill. –Universal Safety Equip. Co., 5115 Diversey Ave.
Dayton, Ohio–Dayton Safety Supply Co., 11 Longworth St.
Denver, Colo. –American Sanitary Prod., 1514 Arapahoe St.
Detroit, Mich. –Boyer-Campbell Co., 801 W. Baltimore
Houston, Tex. –Guardian Safety Equip. Co., 200 Sandman
Linden, N. J. –Guardian Safety Equip. Co., 37 East 21st St.
Los Angeles 66, Calif. –Dickson Safety Prod. Co., 12921 W. Washington Blvd.
Louisville, Ky. –Orr Safety Equip. Co., 1551 S. Tenth St.
Memphis 2, Tenn. –Clements Safety Equip., Inc., 720 S. Third St.
Orange, N. J. –Guardian Safety Equip. Co., 400 S. Jefferson
Orange, N. J. –Ipco Safety Products Co., 400 S. Jefferson St.
Philadelphia, Pa. –Guardian Safety Equip. Co., 214 S. 45th St.
Philadelphia, Pa. –Industrial Products Co., 2820 N. Fourth St.
Pittsburgh 19, Pa. –Safety First Supply Co., 425 Magee St.
St. Paul, Minn. –Continental Safety Equip. Co., 1551 Selby Ave.
Syracuse, N. Y. –William E. Moore Co., 621 S. West St.
Tampa, Fla. –Safety Equip. Co. of Fla., 9505 Florida Ave.
Tulsa, Okla. –Guardian Safety Equip. Co., 1742 S. Main St.

Safety Products Sources

West Hartford, Conn. –Industrial Safety Supply Co., 574 New Park Ave.

STANDARD SAFETY EQUIPMENT COMPANY
431 N. Quentin Road, Palatine, Illinois
**See ad pages 79, 112, 132, 134, 146, 174 and 218.

Branch Offices:

Belleville 7, N. J. –13 Heckle Street
Cleveland 10, Ohio–855 E. 152nd Street
Los Angeles 66, Calif. –12921 W. Washington Blvd.

STANDARD SIGNS, INCORPORATED
3190 E. 65th Street, Cleveland 27, Ohio
**See ad page 292.

STAPLEX COMPANY, THE
Air Sampler Division
777 Fifth Avenue, Brooklyn 32, New York

STERLING-FLEISCHMAN COMPANY
P. O. Box 94, Broomall, Pennsylvania

STEPHENSON CORPORATION
P. O. Box 392, Red Bank, N. J.
**See ad page 279.

Distributors:

Albany, N. Y. –Tech Supply Co., 52 S. Hawk St.
Atlanta, Ga. –American Surgical Supply Co., 409 Peachtree St.
Birmingham, Ala. –Durr Surgical Co., 627 S. 20th St.
Chicago, Ill. –J. A. Renaldi & Co., 111 West 111th St.
Charleston, W. Va. –Medical Equip. Co., 1139 Mulberry Circle
Charlotte 1, N. C. –Medical Gas Products Co., P. O. Box 950
College Park, Md. –Glenn Culbert Co., 9651 Baltimore Ave.
Dallas, Tex. –Gordon Waters, 5631 Ridgedale Ave.
Denver 4, Colo. –Western Fire Department Supply Co., 1011 Larimer St.
Detroit 3, Mich. –Randolph Surgical Co., 13121 Woodward Ave.
Doarville, Ga. –Michael Richard Co., 3473 Allen Dr.
Dravosburg, Pa. –Arthur C. Page, P. O. Box 25
Evansville, Ind. –M & S Fire & Safety Equip. Co., Kerth Ave. & Division St.
Florence, S. C. –National Welders Supply Co., 121 E. Palmetto St.
Grand Rapids, Mich. –Medical Arts Supply Co., 233 Washington St., S. E.
Kansas City, Mo. –Ken Healy, 2316 W. 103rd Terrace
Memphis, Tenn. –Clement Safety Equip. Co., 720 S. 3rd St.
New Haven, Conn. –Professional Equip. Co., 36 Howe St.
New Orleans, La. –F & B Supplies, Inc., P. O. Box 10067
Plainfield, N. J. –Falvey Surgical Co., 1312 W. 7th Ave.
Pomona, Calif. –Charles E. Curry, 2271 Kellogg Park Dr.
Portland, Ore. –American Fire Equip. Co., 2620 S. E. Powell Blvd.
Pound Ridge, N. Y. –Charles W. Stewart, White Birch Rd. RFD #1
Shrewsbury, N. J. –Hugh Boyd, Beechwood Dr.
Toronto 14, Ont., Canada–Wilson & Cousins Ltd., 240 Birmingham St.

STEPHEN-WILLIAM CO.
600 S. Michigan Ave., Chicago 5, Ill.

STICHT, HERMAN H., CO., INC.
27 Park Place, New York 7, N. Y.

STONCO ELECTRIC PRODUCTS COMPANY
333 Monroe Avenue, Kenilworth, New Jersey

STONEHOUSE SIGNS, INCORPORATED
842 Larimer Street, Denver 4, Colorado
**See ad page 287.

SUBURBAN PRODUCTS COMPANY OF PENNSYLVANIA
P. O. Box 6531, Philadelphia 38, Pennsylvania

SUPER VACUUM MANUFACTURING COMPANY
1065 East First Street, Loveland, Colorado
**See ad page 246.

Export Department:

Denver 1, Colo. –P. O. Box 1951

SURETY RUBBER COMPANY
North High Street, Carrollton, Ohio

Branch Offices:

Brielle, New Jersey–Scott Road
Sausalito, Calif. –3030 Bridgeway Blvd.

SURGICAL MECHANICAL RESEARCH, INC.
1905 Beverly Blvd., Los Angeles 57, California
**See ad page 98.

SWITZER BROTHERS, INC.
4732 St. Clair Ave., Cleveland 3, Ohio

Branch Offices:

Chicago, Ill. –1441 N. Dayton St.
New York 17, N. Y. –Chrysler Bldg., 405 Lexington Ave.
South El Monte, Calif. –9314 E. Fern St.

Distributors:

Akron, Ohio–S. G. S. Tool Co., 2060 S. Arlington St.
Atlanta 8, Ga. –Barrington Safety Equip. Co., 493 Peachtree St., N. E.
Baltimore 14, Md. –The Blakeslee Co., 6405 Belair Rd.
Birmingham, Ala. –Mill & Mine Supply Co., Inc., 124 S. 20th St.
Birmingham, Ala. –Safety Engineering & Supply, P. O. Box 1648
Brooklyn 11, N. Y. –S. Klenosky Co., 543 Metropolitan Ave.
Boston, Mass. –The Lambert Co., 79 Sudbury St.
Buffalo 32, N. Y. –The Watson Co., 1362 Kenmore Ave.
Canton 2, Ohio–Dependable Harris Paints, 1146 Tuscarawas St.
Cedar Rapids, Iowa–Johnson Tool & Supply Co., 700 2nd St.
Chicago 6, Ill. –W. D. Allen Mfg. Co., 566-570 West Lake St.
Chicago 10, Ill. –Protective Equip. Co., 634 Orleans St.
Chicago, Ill. –Root Brothers Mfg. & Supply Co., 10317 S. Michigan
Cincinnati 2, Ohio–Bingham Tool & Supply Co., 326 Main St.
Cleveland, Ohio–New United Co., 6933 Carnegie Ave.
Dallas, Tex. –Guardian Safety Equip. Co., 3107 Commerce St.
Dayton 2, Ohio–Dayton Safety Supply Co., 11 Longworth St.
Des Plaines, Ill. –Kinder's Industrial Supply, 1545 Ellinwood Ave.
Duluth 2, Minn. –W. P. & R. S. Mars Co., 322-324 W. Michigan St.
E. Hartford 8, Conn. –Kawie Tool Supply Co., Inc., 676 Tolland St.
E. Orange, N. J. –Nottie Safety Applicances Co., 340 North Park St.
Elizabeth, N. J. –Industrial Rubber Co., 940 South Elmora Ave.
Grand Rapids, Mich. –B. H. W. Tool Sales, Inc., 440 Lake Michigan Dr.
Houston, Tex. –The Wallace Co., Inc., 6945 Clinton N. W.
Indianapolis, Ind. –Plumbers Supply Co., Inc., 1015 Cornell Ave.
Kansas City 15, Kan. –Zink Safety Equip. Co., Inc., 1401 Fairfax Trafficway
Knoxville, Tenn. –Safety Equip. Distributing Co., 830-832 W. Main Ave.
Littleton, Denver, Colo. –F. A. Heckendorf Co., 231 S. Curtice St.
Los Angeles 17, Calif. –Graphic Arts Center, 1534 W. Seventh St.
Lynn, Mass. –Charles S. Feldman, Inc., 57 Monroe St.
Miami 47, Fla. –Fibre Glass Evercoat Corp., 7040 N. W. 35th Ave.
Milwaukee 14, Wis. –Pagel Safety Products, Inc., 4615 W. National Ave.
New Orleans 13, La. –Industrial Fire & Safety, Inc., 1739 Baronne St.
Newark, N. J. –Joseph Ricciardi Paint & Varnish, 170 Belmont Ave.
Orlando, Fla. –Mill Supplies, Inc., 2323 McRae St.
Philadelphia 43, Pa. –W. A. Bruder & Sons, Inc., 52nd St. & Grays Ave.
Portland 1, Ore. –Rodda Paint Co., 6932 S. W. Macadam Ave.
Richmond, Ind. –Miller Brothers Hardware Co., 192 Fort Wayne Ave.
Richmond, Va. –Welsh-Anderson Paint & Hardware, 325 W. Broad St.
Rochester, N. Y. –Hadlock Paint Co., Inc., 486 Central Ave.
Seattle, Wash. –Rudd Paint & Varnish Co., 1608 15th Ave., W.
St. Louis 33, Mo. –Zink Safety Equip. Co., Inc., 7470 St. Charles Rock Rd.
Syracuse, N. Y. –Syracuse Safety Service, Inc., 1108 Spring St.
Troy, N. Y. –B-Lam Equip. Co., 2299 Fifth Ave.
Tulsa 14, Okla. –Guardian Safety Equip. Co., 1742 S. Main St.
W. Hartford, Conn. –Industrial Safety Supply Co., 574 New Park Ave.
Washington 2, D. C. –J. H. Elliott Co., 2101 New York Ave., N. E.

SWIVELIER COMPANY, INC.
30 Irving Place, New York 3, New York

SYLVANIA ELECTRIC PRODUCTS, INCORPORATED
60 Boston Street, Salem, Massachusetts

District Sales Offices:
(To obtain sales and technical information)

Atlanta 10, Ga. –2115 Sylvan Rd., S. W.
Buffalo 6, N. Y. –601 Bailey Avenue
Burlingame, Calif. –1811 Adrian Road
Charlotte, N. C. –Kingsmore Bldg., 1416 E. Morehead St.
Cleveland 35, Ohio–4848 West 130th Street
Dallas 2, Tex. –100 Fordyce Street
Dayton 2, Ohio–333 West 1st Street
Denver 16, Colo. –4700 E. 48th Avenue
Detroit 38, Mich. –7800 Intervale Avenue
Garden City, L. I., N. Y. –600 Old Country Road
Kansas City 15, Kansas–450 Funston Road
Los Angeles 54, Calif. –6505 East Gayhart Street
Melrose Park, Ill. –2001 No. Comell Ave.
Miami, Fla. –300 N. E. 72nd Street, P. O. Box 38-902
Milwaukee 3, Wis. –606 West Wisconsin Avenue
Minneapolis 8, Minn. –711 West Lake St.
Philadelphia 31, Pa. –4700 Parkside Ave.
Pittsburgh 34, Pa. –300 Mt. Lebanon Blvd.
Salem, Mass. –71 Loring Avenue
Salt Lake City 1, Utah–428 South Main Street
Seattle 4, Wash. –3466 E. Marginal Way
Springfield, Va. –Shirley Highway & Edsall Road
St. Louis 39, Mo. –5010 Kemper Avenue
Teterboro, N. J. –1000 Huyler Street

Distribution Centers:
(To order lamps and to obtain shipping information)
Warehouse Stocks maintained in these cities

Atlanta 10, Ga. –2115 Sylvan Rd., S. W.
Buffalo 6, N. Y. –601 Bailey Avenue
Burlingame, Calif. –1811 Adrian Road
Cleveland 35, Ohio–4848 West 130th St.
Dallas 2, Texas–100 Fordyce Street
Denver 16, Colo. –4700 E. 48th Ave.
Detroit 38, Mich. –7800 Intervale Avenue
Kansas City 15, Kansas–450 Funston Road
Los Angeles 54, Calif. –6505 East Gayhart Street
Melrose Park, Ill. –2001 No. Comell Avenue
Miami, Fla. –300 N. E. 72nd Street, P. O. Box 38-902
Philadelphia 31, Pa. –4700 Parkside Ave.
Salem, Mass. –40 Boston Street
St. Louis 39, Mo. –5010 Kemper Avenue
Seattle 4, Wash. –3466 E. Marginal Way
Springfield, Va. –Shirley Highway & Edsall Road
Teterboro, N. J. –1000 Huyler Street

TAYLOR, HALSEY W., COMPANY
137 North Street, N. W., Warren, Ohio

Distributors:

Albany 5, N. Y. –Alexander Mitchell, 103 N. Lake Ave.
Albuquerque, N. M. –Eggers-Massey & Assoc., 211 Sierra Dr. S. E.
Arnold, Md. –Robt. Burns, Jr., Rugby Hall
Atlanta, Ga. –B. Bradford Sales Co., Inc., 436 Trabert Ave., N. W.
Billings, Mont. –Robert A. Clapper, 1011 7th St., West
Birmingham, Ala–J. J. Venable, Jr., 2217 S. 7th Ave.
Brookline, Mass. –John H. Pokorny, 233 Harvard St.
Charlotte 1, N. C. –J. L. Batts, Box 1842
Chicago 11, Ill. –West & Lasley, 154 E. Erie St.
Cincinnati, Ohio–J. M. Beglen, 107 E. 4th St.
Cleveland Heights 18, Ohio–F. R. Wager, 2908 Corydon Rd.
Dallas, Texas–J. P. Dillard & Assoc., 1531 Edison St.
Denver 4, Colo. –Carl H. Roath, 979 Galapago St.
Des Moines 12, Iowa–Lyle Sweeney, 313-49th Street
Detroit 20, Mich. –D. T. Randall & Co., 930 Livernois Ave.
Elkhart, Ind. –G. M. Stroberg, 1522 Lawndale Rd.
El Paso, Texas–Eggers & Massey, 2137 Mills Ave., P. O. Box 7295
Grand Rapids 3, Mich. –Richard H. Meek, 320 E. Fulton St.
Houston 4, Texas–J. H. Stephenson, 1309 Anita St., P. O. Box 8214
Indianapolis, Ind. –J. E. Aspinall, 1937 E. 30th St.
Hartford 3, Conn. –Ray Yost, 410 Asylum St.
Jacksonville, Fla. –B. W. Jack, 218 Adams Street
Kansas City 11, Mo. –Hebenstreit Co., 318 Westport Rd.
Lakewood, N. Y. –R. A. Eckwall, Winch Rd.
Los Angeles 58, Calif. –R. Roemer Co., 2856 Leonis Blvd.
Memphis 3, Tenn. –Southern Sales Co., 215 Madison Ave.
Miami 11, Fla. –N. Ascher, Miami Builders Exchange Bldg.
Milwaukee, Wis. –W. F. Krivanek, 5920 W. North Ave.
Minneapolis 16, Minn. –B. J. Mulcahy, 4903 So. Cedar Lake Road
Nashville 4, Tenn. –Southern Sales Co., 1917 Division St.
Newark 5, N. J. –J. A. Maloney, 19-21-23 Amsterdam St.
New Orleans, La. –W. H. Grant, 208-09 Vincent Bldg.
New York, N. Y. –Edwards & Platt, Inc., 101 Park Ave.
Oklahoma City, Okla. –Phil Short, P. O. Box 7253, 6209 N. W. 39th St.
Peoria, Ill. –W. Frank Riddle, 3921 N. Millbrook Rd.
Philadelphia 7, Pa. –Robt. Burns Assoc., 12 S. 12th St.
Pittsburgh, Pa. –Paul P. Clarke, 280 Orchard Dr., Mt. Lebanon
Raleigh, N. C. –W. T. Heathcock, P. O. Box 1002
Richmond 21, Va. –W. G. Lesemann, P. O. Box 7066 Stewart Station
San Antonio 2, Texas–Clint Hylen, 1009 Ave. "B"
San Francisco 3, Calif. –Morgan F. Willey, 65 Ninth St.
St. Louis 1, Mo. –J. S. Malone & Assoc., Inc., No. 4 North 6th St.
Salt Lake City 10, Utah–A. E. Smothers, Box 1583
Seattle 9, Wash. –Anderson & Beck, 318 Westlake Ave., North
Syracuse 7, N. Y. –Alexander Mitchell, 173 Hopper Rd.
Toledo 1, Ohio–O. T. Randall Co., 1313 Jefferson Ave.
Tucson, Ariz. –Blacknore Sales Co., 2020 E. 13th St.
Washington, D. C. –Harper & Weaver, 1104 Dupont Circle Bldg., 1346 Connecticut Ave. N. W.

TAYLOR, S. G., CHAIN COMPANY, INCORPORATED
3-141st., P. O. Box 599, Hammond, Indiana
**See ad page 285.

Branch Offices:

Los Angeles 22, Calif. –2343 Saybrook Ave.
Minneapolis 10, Minn. –5032 Upton Ave., S.
Newark, N. J. –7 Brown St. & Lister Ave.
Pittsburgh 1, Pa. –3905 Smallman St.

Distributors:

Ashland, Wis. –E. Garnich & Sons Hardware Co.
Bay City, Mich. –Meisel Hardware & Supply Co., 1000-12 N. Water St.
Benton Harbor, Mich. –Brammall Supply Co., 196-208 Water St.
Bloomington, Ind. –Seware & Co., 408 W. 6th St.
Boston 3, Mass. –Joseph T. Ryerson & Son, Inc., P. O. Box 1111
Buffalo 5, N. J. –Joseph T. Ryerson & Son, Inc., P. O. Box 996
Charlotte 1, N. C. –Joseph T. Ryerson & Son, Inc., P. O. Box 10006
Chicago 80, Ill. –Joseph T. Ryerson & Son, Inc., P. O. Box 8000A
Chicago 6, Ill. –Slings Mfg. & Distr. Co., 205 W. Wacker Drive
Cincinnati 14, Ohio–Joseph T. Ryerson & Son, Inc., Annex Box 300
Cincinnati 7, Ohio–The Wirthlin-Mann Co., 1930 Dana Ave.
Cleveland 13, Ohio–Pennsylvania Sling Co., 2168 W. 25th St.
Cleveland 1, Ohio–Joseph T. Ryerson & Son, Inc., P. O. Box 6208
Dallas 22, Tex. –Joseph T. Ryerson & Son, Inc., P. O. Box 5960
Denver 16, Colo. –Union Supply Co., 5460 Colorado Blvd.
Des Moines 13, Iowa–Central Bearings Co., Inc., 505 New York Ave.
Detroit 19, Mich. –Materials Sales Co., 18456 W. McNichols
Detroit, 11, Mich. –Joseph T. Ryerson & Son, Inc., P. O. Box 5338
Duluth 2, Minn. –W. P. & R. S. Mars Co., 322-324 W. Michigan St.
Duluth 6, Minn. –The Satterlee Co., 2920 W. First St.
Eau Claire, Wis. –W. H. Hobbs Supply Co.
Emeryville, Calif. –Joseph T. Ryerson & Son, Inc., P. O. Box 8188
Flint 1, Mich. –Manufacturers Equip. & Supply Co., 319 Lyon St.
Ft. Wayne, Ind. –National Mill Supply Co., 207 E. Columbia St.
Hammond, Ind. –Standard Equip. & Supply Co., 534-36 Michigan St.
Harrisburg, Pa. –Pennsylvania Sling Co., 4220 Paxton St.
Houghton, Mich. –I. E. Swift Co.
Houston 1, Tex. –Joseph T. Ryerson & Son, Inc., P. O. Box 2606
Indianapolis 7, Ind. –Jones & Laughlin Steel Whse. Div., Jones & Laughlin Steel Corp., Indianapolis Whse., 545 W. McCarty St.
Indianapolis 6, Ind. –Joseph T. Ryerson & Son, Inc., P. O. Box 418
Jersey City 3, N. J. –Joseph T. Ryerson & Son, Inc., P. O. Box 484
Kansas City, Mo. –Contractors Supply, 620 E. 18th St.
Kansas City 4, Mo. –Townley Metal & Hardware Co., Third & Walnut Sts.
Knoxville 17, Tex. –Browning Belting & Supply Co., Inc., 801 Jackson Ave.
Los Angeles 54, Calif. –Joseph T. Ryerson & Son, Inc., P. O. Box 3817
Madison 1, Wis. –Richard E. Ela Co., 744 Williamson St.
Milwaukee 1, Wis. –Joseph T. Ryerson & Son, Inc., P. O. Box 534
Minneapolis 1, Minn. –Williams Hardware Co., P. O. Box 540
Muskegon, Mich. –Lakeshore Machinery & Supply Co., 430 Laketon Ave.
Memphis 3, Tenn. –E. C. Blackstone Co., 600 Madison Ave.
Memphis 1, Tenn. –Industrial Supplies, Inc., Poplar Ave. & River Front
Menominee, Mich. –Northern Harware & Supply Co.
Nashville 11, Tenn. –Nashville Machine & Supply Co., 100 Woodycrest Ave.
Omaha 8, Nebr. –Anderson Equip. Co., Inc., 13th & Farnam Sts.
Oshkosh, Wis. –Hart Supply Co., State & Otter Sts.
Peoria, Ill. –Hagerty Brothers Co., 927-45 Southeast Washington St.
Philadelphia 1, Pa. –Joseph T. Ryerson & Son, Inc., P. O. Box 7349
Pittsburgh 34, Pa. –Ekedahl Tool & Supply Co., P. O. Box 10447
Pittsburgh 30, Pa. –John Flocker & Son, 644 Grant St.
Pittsburgh 26, Pa. –Pennsylvania Sling Co., 901 McNeilly Rd.
Pittsburgh 30, Pa. –Joseph T. Ryerson & Son, Inc., P. O. Box 1919
Pittsburgh 30, Pa. –United States Steel Supply Div., P. O. Box 2049
Rockford, Ill. –Factory Supplies, Inc., 1417 Broadway
Seattle 24, Wash. –Joseph T. Ryerson & Son, Inc., P. O. Box 3525
St. Louis 10, Mo. –Charles East & Co., 4030 Chouteau Ave.
St. Louis 2, Mo. –Handlan, Inc., First-Poplar-Plum Sts.
St. Louis 66, Mo. –Joseph T. Ryerson & Son, Inc., P. O. Box 527
Sioux City 1, Iowa–Pecaut Industrial Supply Co., 1819 E. 4th St.
South Bend, Ind. –National Mill Supply, Inc., 224-228 E. Monroe St.
Spokane 10, Wash. –Joseph T. Ryerson & Son, Inc., P. O. Box 2158
Toledo, Ohio–M. I. Wilcox Co., 210 Water St.
Upper Darby, Pa. –Overhead Lifts Co., 101 E. Township Line Rd.
Wallingford, Conn. –Joseph T. Ryerson & Son, Inc., P. O. Box 188
Waterloo, Iowa–Cohn Brothers, 901-917 Commercial St.

TECHNICAL ASSOCIATES
140 West Providencia Ave., Burbank, California

Distributors:

Detroit 27, Mich. –Ben Z. Rubin Co., 12838 Fenkell Ave.
Los Angeles 44, Calif. –C. W. Reed Co., Inc. –5959 So. Hoover
Mountain Lakes, N. J. –Wm. B. Johnson & Assoc., P. O. Box 415
Oakland, Calif. –C. W. Reed Co., Inc., 376–60th St.
Oak Park, Ill. –Ben Z. Rubin Co., 607 No. Grove Ave.
St. Louis 22, Mo. –Atomasters-Suntaine Corp., 111 West Jewel Ave.
Springfield, Ohio–Ben Z. Rubin Co., 515 East Grand Ave.

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

TECT, INCORPORATED
254 Livingston Street, Northvale, New Jersey
**See ad page 83.

Distributors:

Baltimore 30, Md. –Maryland Chemical Co., Russell & Bayard Sts.
Chattanooga, Tenn. –Burkart-Schier Chem. Co.
Chicago, Ill. –Big Ben Chem. & Solvents, Inc., 624 So. Michigan Ave.
Chicago, Ill. –Commerce Petroleum Co., 2980 Archer Ave.
Doraville, Ga. –Atlanta Solvents Co., Box 244
Fall River, Mass. –Brewer & Co., Inc., 61 Pearce St.
LaPuente, Calif. –Hill Bros. Chemical Co., 15017 E. Clark Ave.
Los Angeles, Calif. –Hill Bros. Chemical Co., 2159 Bay St.
Milwaukee 9, Wis. –Commerce Industrial Chem., 6377 N. Teutonia Ave.
Minneapolis, Minn. –Hawkins Chemical Co., 3100 E. Hennepin Ave.
Nashville, Tenn. –Burkart-Schier Chem. Co., 809-16 Ave. North
Pawtucket, R. I. –Mancor Chem. & Equip. Co., P. O. Box 494
Phoenix, Ariz. –Hill Bros. Chemical Co., 1850 W. Jackson
Portland 9, Ore. –United Chemical Co., Inc., 4468 N. W. Yeon Ave.
Providence, R. I. –Mancor Chem. & Equip. Co., 35 Hurdis St., N.
San Diego, Calif. –Hill Bros. Chemical Co., 1525 S. 28th St.
Seattle 8, Wash. –Great Western Chem. Co., 6921 E. Marginal Way
Worcester 8, Mass. –Brewer & Co., Inc., 41 Arctic St.

Toronto 2, Ont., Canada–Safety Supply Co., 214 King St., East

TEDCAR PRODUCTS COMPANY
P. O. Box 1209, Union, New Jersey

TENNANT, G. H., COMPANY
701 North Lilac Drive, Minneapolis 22, Minnesota

Branch Offices:

Arlington 1, Va. –G. H. Tennant Co., Rms. 206 & 207, 2041 Wilson Blvd.
Charlotte 2, North Carolina–603 Liberty Life Bldg.
Chicago 45, Ill. –5875 Lincoln Avenue
Cleveland 28, Ohio–17602 Miles Avenue
Detroit 39, Mich. –22601 Plymouth Road
Newton 58, Mass. –Rm. 5 Second Floor, 313 Washington Street

THERMOTECH SALES – TOMORROW, INCORPORATED
7 West Jackson Street, Mail: P. O. Box 3276, Hayward, California

THERN MACHINE COMPANY
3760 West Fourth St., Winona, Minnesota

THOMPSON MANUFACTURING COMPANY
152 West 12th Street, Erie, Pennsylvania

THOR POWER TOOL COMPANY
175 North State Street, Aurora, Illinois

Factory Sales and Service Branches:

Atlanta 5, Ga. –1363 Spring St.
Birmingham 4, Ala. –713 Graymont Ave., North
Boston 46, Mass. –48 Pearl St., (Brookline)
Buffalo 23, N. Y. –735 Military Road
Chicago 7, Ill. –1405 W. Washington Blvd.
Cincinnati 12, Ohio–3726-28 Floral Ave.
Cleveland 3, Ohio–E. 40th & Payne Ave.
Denver 4, Colo. –2704 W. Eighth Ave.
Detroit 27, Mich. –14515 Puritan Ave.
Houston 11, Texas–7341 Harrisburg Blvd., P. O. Box 9384
Indianapolis 2, Ind. –1489 North Harding Street
Kansas City 8, Mo. –606 W. 17th St.
Long Island City, N. Y. –32-34 Greenpoint Ave.
Los Angeles 22, Calif. –6200 E. Slauson Ave.
Milwaukee 15, Wis. –3911 W. Greenfield Ave.
Newark 5, N. J. –1 Tichenor Lane, Corner Parkhurst St.
Philadelphia 30, Pa. –1701 Fairmount Ave.
Pittsburgh 21, Pa. –204 Thomas Street
Richmond 22, Va. –2024 Chamberlayne Ave.
St. Louis 8, Mo. –4044 Forest Park Blvd.
San Francisco 3, California–315 So. Van Ness Ave.
Seattle 22, Wash. –611 East Pike Street

Toronto 9, Ont., Can. –1909 Davenport Road

TINGLEY RUBBER CORPORATION
903 Ross Street, Rahway, New Jersey
**See ad page 172.

TITMUS OPTICAL CO., INC.
P. O. Box 191, Petersburg, Va.

Distributors:

Located in principal cities in U. S. & Canada.

TOKHEIM CORP.
1602 Wabash Ave., Fort Wayne, Ind.
**See ad page 248.

TONEMASTER MANUFACTURING COMPANY
1030 West Alta Road, Peoria, Illinois

TOOL & MANUFACTURING COMPANY
P. O. Box 10417, Pittsburgh 34, Pennsylvania

Distributors:

Baltimore 6, Md. –Harry M. Cox, 4315 Mary Ave.
Chicago 5, Ill. –Metropolitan Hdwe. Co., Inc., 536 S. Dearborn St.
Cincinnati 25, Ohio–Orr Safety Supply Co., 2853 Colerain Ave.
Cleveland 35, Ohio–Virgil Milner, 4319 W. 191st St.
Erie, Pa. –MacInnes Steel Sales Co., 202 Marine Bank Bldg.
Evansville, Ind. –Orr Safety Equip. Co., 2813 E. Jefferson Ave.
Flint 1, Mich. –Gransden-Hall & Co., Walnut & Poplar St.
Indianapolis 26, Ind. –Orr Safety Equip. Co., 6165 Hampton Drive
Inkster, Mich. –Donald H. Coats, 276 Auburn Drive
Louisville 10, Ky. –Orr Safety Equip. Co., 1551 S. 10th Street
Minneapolis 4, Minn. –Olson Power Tool Co., 1601 S. Sixth St.
Newark 2, N. J. –H. B. Bighouse, 972 Broad St.
Paoli, Pa. –Moorhouse and Co., P. O. Box 568
Saginaw, Mich. –Gransden-Hall of Saginaw, Janess & Outer Drive
St. Louis 32, Mo. –Nichols Equip., Inc., 8336 Olive Blvd.
S. Milwaukee, Wis. –Somil Equip. & Supply Co., P. O. Box 4
Syracuse, N. Y. –MacInnes Steel Sales Co., 317 State Tower Bldg.
Waltham 54, Mass. –Bebo Associates, 25 Grant St.

Hamilton, Ont. –Railway & Power Eng. Corp., Ltd., 522 James St., N.
Montreal, Quebec–Railway & Power Eng. Corp., Ltd., 3735 St. James St.
New Glasgow, Nova Scotia–Railway & Power Eng. Corp., Ltd., 210 Archimedes
Toronto, Ontario–Railway & Power Eng. Corp., Ltd., 197 Eastern Ave.
Windsor, Ont. –Railway & Power Eng. Corp., Ltd., 480 Hanna St.

TORIT MANUFACTURING COMPANY
1133 Rankin Street, St. Paul 13, Minnesota

Representatives:

Baltimore 14, Md. –Taze & Hewitt, 33 E. 21 St.
Cambridge 42, Mass. Wolverine Equip. Co., 31 Main St.
Cleveland 17, Ohio–Garco Machinery, Inc., 21000 St. Clair Ave.
Dallas, Texas–R. V. Miles, 2909 Canton
Daly City, Calif. –Geo. F. Howe, 247 Irvington St.
Dayton 19, Ohio–Paul W. Kronauge, Fletcher Bldg., 53 Park Ave.
Denver 3, Colo. –Clint Helton & Co., 142 Broadway
Detroit 38, Mich. –Dyment & Girt, Assoc., 10600 Puritan
Harrisonburg, Va. –Mrs. M. V. Olmert, P. O. Box 149
Indianapolis 18, Ind. –Byron Confer, 2809 Brookside Ave.
Kansas City 6, Mo. –F. H. Holtkamp, 2110 Main St.
Los Angeles, Calif. –Franklin Engineering Co., 406 S. Main St.
Loves Park, Ill. –Industrial Engineering Sales Agency, P. O. Box 7
Milwaukee, Wis. –Edward Schuerer, 2625 N. 111th St.
Minneapolis 6, Minn. –Milton Granquist, 2431 E. Franklin Ave.
Minneapolis 4, Minn. –A. C. Nydegger, 416 S. 10th St.
New York 23, N. Y. –Arnold G. Landres, 17 W. 60th St.
Oak Forest, Ill. –Richard Bennett, 15007 Mission
Orlando, Fla. –E. E. McCarthy, P. O. Box 1219
Philadelphia 44, Pa. –Kellogg Appliance Co., 18 W. Chelton Ave.
Phoenix, Ariz. –Thunderbird Sales Corp., 2255 W. McDowell
Pittsburgh 20, Pa. –Voss Machinery Co., 515 S. Main St.
Rochester 7, N. Y. –James A. Pennington, 36 Winthrop St.
St. Louis 10, Mo. –F. H. Holtkamp, 2151 Lawrence St.
Seattle 15, Wash. –Frank K. Donnelly, 401 E. 92nd St.
Troy, N. Y. –C. H. Crockett, Stow Ave.

P. I. C. S. A., Mexico 11, D. F. –Carlos Farias, Ave. Michoacan No. 76
Plaza Moraga, Manila–Comet Commercial Corp., Singson Bldg.
Toronto, Ont., Canada–D. M. Duncan, Machinery Co., 197 College St.
Vancouver 10, B. C., Canada–General Equip. Ltd., 224 W. 5th Ave.
Windsor, Ont., Can. –D. M. Duncan, Mach. Co., 1958 Wyandotte St., E.

TRACERLAB INC.
1601 Trapelo Rd., Waltham 54, Mass.

TRAINING AIDS
235 Iroquois Rd., Hillside, Ill.
**See ad page 297.

TRAVIS FABRICS, INCORPORATED
1071 Avenue of the Americas, New York 18, New York

Branch Offices:

Chicago, Ill. –300 West Adams St.
Los Angeles, Calif. –819 Santee Street
Pittsburgh, Pa. –117 Beaver Avenue
St. Louis, Mo. –1404 Shell Building

TRIPPE MANUFACTURING COMPANY
133 North Jefferson Street, Chicago 6, Illinois

Distributors:

Consult your local electrical or automotive distributor

TRUCK EQUIPMENT COMPANY
3963 Walnut Street, Denver 5, Colorado

Distributors:

Allentown, Pa. –Mack Truck Co.
Baltimore 20, Md. –Warner Fruehauff, Bush & Hamburg Streets
Billings, Mont. –Montana Trailer Sales & Equip. Co., Box 1702
Buffalo 6, N. Y. –Maday Body & Equip. Corp., 575 Howard St.
Buffalo 5, N. Y. –Morrison Steel Products, P. O. Box 3003
Charlotte, N. C. –Power Equipment Co., P. O. Box 10158
Chicago 6, Ill. –Leich Sales Corp., 427 W. Randolph St.
Clintonville, Wis. –Utility Tool & Body Co., Inc., 151 E. 16th St.
Cranston, R. I. –Providence Body Co., 750 Wellington Ave.
Denver, Colo. –Rocky Mountain Export Co., 975 Grant St.
Des Moines, Iowa–Hawkeye Truck & Equipment Co., 4101 E. 14th St.
Des Plaines, Ill. –Illinois F. W. D. Truck & Equipment Co., 6116 North River Road
Detroit 39, Mich. –Youngs Equipment Co., 15150 Telegraph Rd.
Fargo, N. D. –Smith, Inc.
Great Neck, N. Y. –Vaniman International, Inc., 219 E. Shore Rd.
Hastings, Neb. –David R. Hill Co., 839 N. St. Joseph Ave.
Houston 7, Tex. –Koenig Iron Works, Inc., P. O. Box 3003
Kansas City, Mo. –American Body & Equipment Co., 2011 Gunotte
Los Angeles 7, Calif. –Calavar Corp., 2700 South Broadway
Memphis, Tenn. –Utilities Equip. Co., Inc., 821 S. Barksdale
Minneapolis, Minn. –Smith, Inc., 2301 University Ave., S. E.
Pittsburgh 21, Pa. –Ateco Equipment Co., P. O. Box 8741
Portland, Maine–Hews Body Co., 82 St. John Street
St. Louis, Mo. –Steelweld Equip. Co., Inc., Lambert Field
Salt Lake City 4, Utah–W. H. Pingree Co., 1035 S. 7th W. Street
San Francisco 7, Calif. –F. W. D. Pacific Co., 850 Harrison St.
San Francisco 11, Calif. –Manufacturers' Representative, 420 Market
Seattle 4, Wash. –Robbins Utilities Equip. Co., 3423 Fourth Ave. S.
Washington 11, D. C. –Jenkins & Assoc., Inc., 3900-16th St., N. W.
Wynnewood, Pa. –The Wyndon
Washington 1, D. C. –S. J. Meeks' Son, 622 G Street, N. W.

Toronto 18, Ontario, Can. –LaFrance Fire Engine & Foamite Ltd., 60 Coronet Road

TRUSCON LABORATORIES
1700 Caniff, Detroit 11, Michigan

Branch Offices:

Chicago, Ill. –7621 S. Greenwood Ave.
Covina, Calif. –1061 N. Virginia Ave.
Decatur, Ga. –2800 E. Ponce De Leon Ave.
Detroit, Mich. –1700 Caniff Ave.
Houston, Texas–3915 Weslow
Kansas City, Mo. –228-34 W. 4th St.
Long Island City, N. Y. –32-78 31st
Milwaukee, Wis. –126 N. Jefferson St.
New York, N. Y. –79 Madison Ave.
St. Louis, Mo. –926 Spruce Street
Syracuse, N. Y. –2006 Teall Ave.
Toledo, Ohio–723 So. St. Clair St.

Distributors:

Albany, N. Y. –John & Salm
Birmingham, Ala. –Grayson Lumber
Buffalo, N. Y. –Schuele & Co., 12 Summer St.
Canton, Ohio–Pratt Paint Smith
Cedar Rapids, Iowa–Cedar Rapids Paint Supply, 509 Third S. E.
Cincinnati, Ohio–Fisher Paint & Glass, 2858 Colerain
Cleveland, Ohio–Pretzer Paint Co.
Columbia, S. C. –Columbia Supply, 823 Gervais St.
Columbus, Ohio–Columbus Paint Prod., 1288 Oak St.
Decatur, Ga. –Contractors Suppliers, 427 W. Ponce De Leon Ave.
Denver, Colo. –Professional Paints Co., 3600 E. 45th Ave.
Eau Claire, Wis. –W. H. Hobbs
Erie, Pa. –Comstock Building Prod., 3612 E. Lake Rd.
Fond du Lac, Wis. –Huber Paint & Glass
Grand Rapids, Mich. –Quinn McGovern
Hartford, Conn. –Johnson Paint & Wallpaper
Houston, Texas–Bissonnet Paint, 2410 Bissonnet Dr.
Indianapolis, Ind. –Standard Enamel & Paint
Jamestown, N. Y. –Pearl City Paint & Glass
Johnson City, N. Y. –G. R. McConnell
Knoxville, Tenn. –Wilson W. Wilkinson
Memphis, Tenn–Fischer Lime & Cement Co., Linden Ave. at Walnut
Milton Pa. –Construction Supply & Equip.
Minneapolis, Minn. –Warner Hardware
New Haven, Conn. –F. E. Spencer
New Orleans, La. –Neptune Supplies, 3408 Purdue Dr.
Newark, N. J. –R. J. Riccardi
Philadelphia, Pa. –A-Z Paints & Supplies, 411 S. 60th St.
Saginaw, Mich. –Boice Bird & Sons, 106 Hoyt St.
St. Louis, Mo. –Sullivan Paint Co.
St. Paul, Minn. –Reserve Supply
Sioux Falls, S. D. –Lumberman's Supply
Syracuse, N. Y. –Lewis & Tanner
Utica, N. Y. –Utica Paint Co.
Warren, Pa. –Jensen Paint Co.
Waterbury, Conn. –Verriker Paint
W. Minister, Md. –Bennett, Thomas & Hunter
Westbury, N. Y. –Pergament Paint

TURCO PRODUCTS, INC.
24600 S. Main St., Wilmington, Calif.

Branch Offices:

San Francisco 7, Calif. –605 Third St., Rm. 7
Hialeah, Fla. –1431 Flamingo Way, Rm. 105
Joliet, Ill. –P. O. Box 1161
Paterson 1, N. J. –8 Morris St.
Cleveland 13, Ohio–208-209 Western Reserve Bldg., 1468 W. 9th St.
Erie, Pa. –21 W. 11th St.
Upper Darby, Pa. –6447 Market St.
Chattanooga 3, Tenn. –871 McCallie Ave.
Houston 10, Tex. –1606 Henderson St.
Seattle 4, Wash. –1565 6th Ave., South
Atlanta 24, Ga. –200 Ottley Drive, N. E.
Kansas City 8, Mo. –360 Union Station

U-C-LITE MANUFACTURING CO.
1050 W. Hubbard St., Chicago 22, Ill.

Distributors:

Albany, N. Y. –Henzel-Powers, Inc., 294 Broadway
Birmingham, Ala. –Moore-Handley Hdwe. Co., 27 S. 20th
Boston, Mass. –Westinghouse Elec. Supply Co., 95 Brookline Ave.
Buffalo, N. Y. –Wehle Electric Co., 473 Ellicott St.
Charlotte, N. C. –Mill-Power Supply Co., P. O. Box 1339
Chicago, Ill. –W. S. Darley Co., 2801 Washington Blvd.
Chicago, Ill. –Westinghouse Elec. Supply Co., 113 N. May St.
Cincinnati, O. –Graybar Electric Co., 115 W. McMicken
Cleveland, O. –Graybar Electric Co., 1100 E. 55th St.
Denver, Colo. –Western Fire Equip. Co., 1139 St. Paul St.
Detroit, Mich. –Paul R. Salomon, 2741 Grand River
Elmira, N. Y. –Wehle Electric Co., 213 Baldwin St.
Hartford, Conn. –Beacon Light & Supply Co., 108 Allyn St.
Houston, Texas–Houston Oil Field Mtl. Co.
Mineola, L. I., N. Y. –Mid-Island Electrical Sales, 240 E. Jericho Turnpike
Minneapolis, Minn. –Northland Electric Supply Co., 521 S. 10th St.
Mobile, Ala. –McGowin-Lyons Hdwe. Co., Water At Lewis
Monterey Park, Calif. –Chas. E. Morton Co., 447 W. Garvey
Newark, N. J. –Newark Specialty Co., 20 Prince St.
Newark, N. J. –Westinghouse Elec. Supply Co., 528 Ferry St.
New York, N. Y. –Baltinger Electric Co., Inc., 57 Barclay St.
Oklahoma City, Okla. –Republic Supply Co.
Orlando, Fla. –Hughes Supply, Inc., P. O. Box 7275
Philadelphia, Pa. –Graybar Electric Co. Inc., 910 Cherry St.
Pittsburgh, Pa. –Graybar Electric Co. Inc., 900 Ridge
Portland, Ore. –Western Fire Equipment
San Francisco, Calif. –Western Fire Equip. Co., 69 Main St.
Tampa, Fla. –Raybro Electrical Supplies, Inc., P. O. Box 1351
Tulsa, Okla. –Jones & Laughlin Supply Div., P. O. Drawer 2481
Washington, D. C. –General Electric Supply Co., 705 Edgewood, N. E.
Wilmington, Del. –Artcraft Electric Supply Co., 208 W. 4th St.

UNION CARBIDE CONSUMER PRODUCTS CO.
270 Park Ave., New York 17, N. Y.

Branch Offices:

Los Angeles, Calif. –2770 Leonis Blvd.
San Francisco, Calif. –22 Battery St.
Atlanta, Ga. –1371 Peachtree St., N. E.
Chicago, Ill. –230 North Michigan
Kansas City, Mo. –910 Baltimore Ave.
New York, N. Y. –270 Park Ave.
Dallas, Tex. –1511 Bryan St.
Pittsburgh, Pa. –The Oliver Bldg., Mellon Square

SAFETY PRODUCTS INDEX begins on page 301

Safety Products Sources

UNION INDUSTRIAL EQUIPMENT CORPORATION
40 Beech St., Part Chester, New York

Distributors:

Atlanta 5, Ga.—Southeastern Safety Appliance Co., 730 Miami Circle N. E.
Baton Rouge 6, La.—Guardian Safety Equip. Co., 3615 Capitol Heights Ave.
Bienne, Switzerland—Sacon, 13 Rue De La Gare
Boston 10, Mass.—General Equip. Co., 261 Franklin St.
Buffalo 12, N. Y.—Protective Equip. Supply Co., 1270 Broadway
Buffalo 23, N. Y.—Watson Co., 1362 Kenmore Ave.
Chicago 23, Ill.—Karel First Aid Supply Co., 4342 Ogden Ave.
Chicago 39, Ill.—Universal Safety Equip. Co., 5115 W. Diversey Ave.
Cincinnati 25, Ohio—Orr Safety Supply Co., 2853 Colerain Ave.
Cleveland 9, Ohio—Safety First Supply Co., 4257 W. 35th St.
Columbus, Ohio—Ohio Safety Products Co., 528 Seymour Ave.
Detroit 34, Mich.—Sterling H. Dockson, 9285 E. Outer Drive
East Orange, N. J.—Notte Safety Appliance Co., 340 N. Park St.
Edmonton, Alberta, Canada—Soper Singleton Electric Co., Ltd., 10831 101 St.
Hamberg, Germany—Shriro Vbersee Handel G. m. b. H., Monckeberg Strasse 18
Honolulu 4, Hawaii—Gaspro Ltd., P. O. Box 2454, 2305-2371 Dillingham Blvd.
Houston 19, Tex.—Guardian Safety Equip. Co., P. O. Box 13384, 200
Indianapolis, Ind.—Orr Safety Supply Co., 1637 N. Illinois St.
Kalamazoo, Mich.—Safety Services, Inc., 1903 W. Main St.
Kansas City 15, Kan.—Zink Safety Equip. Co., Inc., 1401 Fairfax Trafficway
Linden, N. J.—Guardian Safety Equip. Co., 37 E. 21st St.
London E. C. 2, England—Shriro (UK) Ltd., Winchester House, Old Brood St.
Los Angeles 3, Calif.—E. D. Bullard Co., 6719 S. Figueroa St.
Louisville 10, Ky.—Orr Safety Supply Co., 1551 S. Tenth St.
New Haven, Conn.—Abern Safety Equip Corp., 2 Eld St.
Philadelphia, Pa.—Guardian Safety Equip. Co., 214-16 S. 45th St.
Pittsburgh, Pa.—Safety First Supply Co., 425 Magee St.
Portland 14, Ore.—Sanderson Safety Supply Co., 935 S. E. Hawthorne Blvd.
St. Louis 10, Mo.—Reis Equip. Co., 1417 Tower Grove
St. Paul 4, Minn.—Continental Safety Equip., 1551 Selby Ave.
Salt Lake City 10, Utah—Universal Safety & Fire Equip. Co., Inc., 727 S. W. Temple, P. O. Box 1587
Sandman St.
Seattle 1, Wash.—Safety & Supply Co., 119 Blanchard St.
Sausalito, Calif.—E. D. Bullard Co., 2680 Bridgeway
Tokyo, Japan—Shriro Ltd., S. A., P. O. Box 572 Central
Toronto 18, Ont., Canada—Bell Electricord & Safety Ltd., 341 Bering Ave.
Troy, N. Y.—B-Lann Equipment Co., 2297 Fifth Ave.
Tulsa 19, Okla.—Guardian Safety Equip. Co., 1742 S. Main St.
Vancouver 5, B. C., Canada—Fleck Bros. Ltd., 110 Alexander St.

UNION WIRE ROPE
Amsco Steel Corporation
21st and Manchester Avenue, Kansas City 26, Missouri

Branch Offices:

Ashland, Ky.—2200 Front St.
Birmingham 3, Ala.—1627 1st Ave., So.
Chicago 22, Ill.—1445 W. Hubbard St.
Dallas, Tex.—1417 Howell St.
Denver 7, Colo.—3920 Grape St.
Houston 3, Tex.—3229 Navigation Blvd.
Jacksonville 1, Fla.—606 Fields Ave.
Minneapolis 14, Minn.—701 Main St., S. E.
New Orleans 12, La.—1539 Julia St.
Odessa, Tex.—300 South Williams
Oklahoma City 4, Okla.—900 S. W. 5th St.
Philadelphia 24, Pa.—4391 Aramingo Ave.
Pittsburgh 33, Pa.—845 Mumford St.
Portland 9, Ore.—1637 N. W. 14th Ave.
Sacramento 15, Calif.—1150 Arden Way

UNITED STATES BORAX & CHEMICAL CORP.
630 Shatto Place, Los Angeles 5, Calif.
**See ad page 61.

UNITED STATES ENVELOPE COMPANY
23 Cypress Street, Springfield 2, Massachusetts

Divisions and Sales Offices:

Chicago, Ill.—Chicago Sales Office, 221 No. LaSalle
Dallas, Tex.—Southwest Division
Doraville, Ga.—Atlanta Division
Emeryville, Calif.—San Francisco Division
Hartford, Conn.—Hartford Division
Indianapolis, Ind.—Central States Division
Los Angeles, Calif.—Los Angeles Division
Metuchen, N. J.—Seaboard Division
New York, N. Y.—New York Sales Office, 217 Broadway
Rockville, Conn.—White Corbin Division
Springfield, Mass.—Kellogg Container Division
Springfield, Mass.—Kellogg Envelope Division
Waukegan, Ill.—National Division
Worcester, Mass.—Hill Division
Worcester, Mass.—Logan Division
Worcester, Mass.—Paper Cup Division

Distributors:

Abilene, Tex.—Mayfield Paper Co.
Albuquerque, N. M.—Dixon Paper Co.
Amarillo, Tex.—Amarillo Paper Co.
Atlanta, Ga.—Fulton Paper Co.
Austin, Tex.—Lone Star Paper Co.
Baltimore, Md.—John C. Louis Co., Inc.
Baton Rouge, La.—General Paper Co.
Beaumont, Tex.—Magnolia Paper Co.
Birmingham, Ala.—Dillard Paper Co.
Boston, Mass.—R. G. Mearn & Co., Inc.
Boston, Mass.—P. J. O'Donnel Co., Inc.
Buffalo, N. Y.—Beals, McCarthy & Rogers, Inc.
Charleston, S. C.—Palmetto Fixture & Notion Co.
Charleston, W. Va.—Machinery, Inc.
Charlotte, N. C.—Dillard Paper Co.
Chattanooga, Tenn.—Jacobs Wholesale Paper Co.
Chicago, Ill.—Arrow Contractors Equip. Co.
Chicago, Ill.—General Construction Equip. Co.
Cincinnati, Ohio—Cincinnati Cordage & Paper Co.
Cleveland, Ohio—Union Paper & Twine Co.
Columbia, S. C.—Palmetto Paper Co.
Columbus, Ohio—Lorenz Equipment Co.
Concord, N. H.—Hodge & Mattheis Co.
Concord, N. H.—Sanel Indust. Equip. & Suppl.
Corpus Christi, Tex.—Jack Bonner Co.
Dallas, Tex.—Olmsted & Kirk Co.
Danville, Ky.—Central Supply & Equip. Co., Inc.
Denver, Colo.—Dixon Paper Co.
Detroit, Mich.—Contractors Tool & Supply Co.
E. Providence, R. I.—Hodge & Mattheis Co.
El Paso, Tex.—Dixon Paper Co.
Englewood, N. J.—Contractors Supply Corp.
Erie, Pa.—Perry Mill Supply Co.
Evansville, Ind.—Austin Powder Co.
Ft. Worth, Tex.—E. L. Day Distributors
Fresno, Calif.—Zellerbach Paper Co.
Grand Rapids, Mich.—Miller Equipment Co.
Greensboro, N. C.—Dillard Paper Co.
Greenville, S. C.—Dillard Paper Co.
Harrisburg, Pa.—Appleby Bros. & Whitaker
Hartford, Conn.—L. L. Ensworth & Son, Inc.
Houston, Tex.—Moore Paper Co.
Huntington, W. Va.—Mountain State Supply Co.
Hyde Park, Mass.—Parker-Danner Co.
Indianapolis, Ind.—Reid-Holcomb Co., Inc.
Jackson, Mich.—Union Paper & Twine Co.
Jackson, Miss.—Central Paper Co.
Jacksonville, Fla.—Graham Jones Paper Co.
Kansas City, Mo.—Bermingham & Prosser
Knoxville, Tenn.—Southern Paper Co.
Little Rock, Ark.—Arkansas Paper Co.
Long Island City, N. Y.—Contractors Supply Corp.
Los Angeles, Calif.—Mine & Mill Supply Co.
Louisville, Ky.—Dehler Bros. Co., Inc.
Lynchburg, Va.—Caskie Paper Co.
Manchester, N. H.—Parker-Danner Co.
Memphis, Tenn.—Taylor Paper Co.
Meridan, Miss.—Newell Paper Co.
Miami, Fla.—All Miami First Aid Kit Co.
Mobile, Ala.—Office Supplies, Inc.
Montclair, N. J.—Hartley Supply Co.
Montgomery, Ala.—Mercantile Paper Co.
Needham Heights, Mass.—Hodge & Mattheis Co.
New Haven, Conn.—W. E. Chatfield Co.
New Orleans, La.—Columbia Paper Co.
New York, N. Y.—Contractors Trading & Equip.
Norfolk, Va.—Eper Fitzgerald Paper Co.
Oklahoma City, Okla.—General Tool & Supply Co.
Orlando, Fla.—Graham Jones Paper Co.
Owensboro, Ky.—Cox Paper Co.
Paducah, Ky.—Henry A. Potter Supply Co.
Perth Amboy, N. J.—E & B Mill Supply Co.
Philadelphia, Pa.—Service Supply Corp.
Phoenix, Ariz.—Blake Moffet & Towne
Pittsburgh, Pa.—Dravo-Doyle Co.
Pocatello, Idaho—Gen State Paper Co.
Portland, Maine—Hodges & Mattheis Co.
Portland, Maine—Parker-Danner Co.
Portland, Oregon—West Coast Paper Co.
Raleigh, N. C.—Dillard Paper Co.
Raritan, N. J.—Raritan Valley Hardware Co.
Richmond, Va.—Richmond Paper Co.
Roanoke, Va.—Dillard Paper Co.
Rockford, Ill.—I. C. Webb & Assoc., Inc.
Sacramento, Calif.—Zellerbach Paper Co.
St. Louis, Mo.—A. B. Avery Co.
Salt Lake City, Utah—Dixon Paper Co.
San Diego, Calif.—Blake Moffet & Towne
San Francisco, Calif.—Blake Moffet & Towne
Sault Ste. Marie, Mich.—Malette Construction Equip. Co.
Savannah, Ga.—Chatham Paper Co.
Seattle, Wash.—West Coast Paper Co.
Shreveport, La.—Bancroft Paper Co.
So. Burlington, Vt.—Hodge & Mattheis Co.
Syracuse, N. Y.—Syracuse Supply Co.
Tallahassee, Fla.—Capital Paper Co.
Tampa, Fla.—Graham Jones Paper Co.
Texarkana, Tex.—Louisiana Paper Co.
Topeka, Kan.—Carpenter Paper Co.
Tucson, Ariz.—Blake Moffet & Towne
Tulsa, Okla.—Tulsa Paper Co.
Westbury, N. Y.—Contractors Supply Corp.
West Haven, Conn.—Hodges & Mattheis Co.
Wheeling, W. Va.—Trimble & Lutz Supply Co.
Wichita Falls, Tex.—Empire Paper Co.
Wichita, Kan.—Wichita Paper Co.
Wilkes-Barre, Pa.—Zoeller Paper Co.
Williamsport, Pa.—Williamsport Paper Co., Inc.
Wilmington, N. C.—Dillard Paper Co.
Zanesville, Ohio—Goss Supply Co.

UNITED STATES RADIUM CORPORATION
Hanover Avenue, Morristown, New Jersey

Branch Offices:

Bloomsburg, Pa.—Almedia Plant
Chicago 51, Ill.—5942 W. Chicago Avenue
Geneva, Switzerland—U. S. Radium Corp-Europe, 76 Avenue Krieg
N. Hollywood, Calif.—5420 Vineland Avenue

Ontario, Canada—Radelin Ltd., 10b Lakeshore Rd, E., Port Credit

Distributors:

Atlanta, Ga.—Aeromart, Inc., 3230 Peachtree Rd. N. E.
Easton, Pa.—Wm. H. Cordts, P. O. Box 109
St. Paul, Minn.—Russell G. Ragon, 1406 W. Idaho Avenue

UNITED STATES RUBBER CO.
1230 Avenue of the Americas, New York 20, N. Y.
**See ad page 139.

UNITED STATES SAFETY SERVICE COMPANY
1535 Walnut Street, Kansas City 8, Missouri
**See ad pages 90 and 133.

Branch Offices:

Atlanta, Ga.—333 Candler Bldg.
Baltimore, Md.—320 Mathieson Bldg.
Birmingham, Ala.—512 N. 18th Street
Bloomfield, N. J.—131 Franklin St.
Boston, Mass.—618 Little Bldg.
Buffalo, N. Y.—1006 Prudential Bldg.
Chicago, Ill.—Suite 1030, 175 W. Jackson
Cincinnati, Ohio—307 E. 4th St.
Cleveland, Ohio—14812 Detroit Ave.
Dallas, Texas—309 Meadows Bldg.
Detroit, Mich.—13831 Jas. Couzens Hwy.
Hartford, Conn.—119 Ann St.
Houston, Texas—3822 Almeda
Indianapolis, Ind.—5250 Keystone Court Bldg.
Kansas City, Mo.—1535 Walnut St.
Los Angeles, Calif.—5829 East Beverly Blvd.
Milwaukee, Wis.—1128 Empire Building
Minneapolis, Minn.—210 S. 5th St.
New Orleans, La.—1739 Baronne St.
Oakland, Calif.—4133 Broadway
Philadelphia, Pa.—1121 West'n Saving Fund Bldg.
Pittsburgh, Pa.—101 Investment Bldg.
St. Louis, Mo.—614 Paul Brown Bldg.
Seattle, Wash.—422 Smith Tower
Syracuse, N. Y.—712 State Tower Bldg.
Tulsa, Okla.—714 Enterprise Bldg.

UNITED STATES STEEL CORPORATION
525 William Penn Place, Pittsburgh 30, Pennsylvania

Sales Offices:

Baltimore 2, Md.—300 St. Paul Place
Boston 16, Mass.—Statler Office Bldg., 20 Providence St.
Buffalo 2, N. Y.—1305 Liberty Bank Bldg., 424 Main St.
Chicago 90, Ill.—208 South LaSalle Street
Cincinnati 1, Ohio—1416 Fifth Third Bank Bldg., Fourth & Walnut
Cleveland 14, Ohio—620 Leader Bldg., 526 Superior Ave.
Detroit 2, Mich.—9-236 General Motors Bldg.
Hartford 3, Conn.—37 Lewis Street
Indianapolis 6, Ind.—Room 428, Chamber of Commerce Bldg., 320 N. Meridian Street; P. O. Box 408
Kansas City 5, Mo.—2706 Power and Light Bldg., 104 W. 14th St.
Milwaukee 1, Wis.—Bankers Bldg., 208 E. Wisconsin Ave.
New York 6, N. Y.—71 Broadway
Philadelphia 3, Pa.—1220 Suburban Sta. Bldg.; 1617 Pennsylvania
Pittsburgh 30, Pa.—525 William Penn Place
St. Louis 3, Mo.—Room 1100 Shell Bldg., 1221 Locust St.
St. Paul 1, Minn.—W-1352 First Nat'l Bank Bldg., 334 Minnesota St.

UNITED WORLD FILMS, INC.
1445 Park Ave., New York 29, N. Y.

Branch Offices:

Atlanta, Ga.—287 Techwood Drive, N. W.
Chicago 5, Ill.—542 S. Dearborn St.
Dallas 1, Tex.—2227 Bryan St.
Los Angeles 36, Calif.—4610 Melrose Ave.
New York 29, N. W.—105 E. 106th St.
Portland 13, Ore.—9023 N. E. Sandy Blvd.

UNIVERSAL MANUFACTURING CORPORATION
550 W. New Castle Street, Zelienople, Pennsylvania

Distributors:

Andalusia, Ala.—Andalusia Manufacturing Company
Atlanta 13, Ga.—Maxwell & Hitchcock, Inc., P. O. Box 4141
Baltimore 18, Md.—Tool & Supply Co., Inc., 701 Bonaparte Ave.
Brookline 46, Mass.—Carbeau-Eastern, Inc., 94 Beaconsfield Rd.
Buffalo 11, N. Y.—Kenmore Construction Equip. Co., 95 Leslie St.
Charleston, S. C.—Construction Equip. Corp., 148 E. Bay St.
Charleston, W. Va.—Machinery, Inc., P. O. Box 2911, 2855 Piedmont Rd.
Charlotte 1, N. C.—Constructors Equip. Rental Co., Box 11293
Charlotte, N. C.—H. B. Owsley & Son, Inc., P. O. Box 449, Pineville Rd.
Charlottesville, Va.—Holly Piedmont Corp., 305 Kent Rd.
Chicago 32, Ill.—Arrow Contractors Equip. Co., 4646 S. Kedzie Ave.
Chicago 30, Ill.—Way-Kan Contractors Supply Co., 3842 W. Lawrence Ave.
Cincinnati 39, Ohio—Flack Equip. Co., 2365 Galbraith Rd., West
Cumberland, Md.—Cumberland Cement & Supply Co., P. O. Box 868
Dallas 7, Tex.—F. M. Equip. Co., Inc., 378 S. Industrial Blvd.
Dayton 4, Ohio—Flack Equip. Co. or Flack Equip. Rental Co., 1240 McCook Ave.
Denver 8, Colo.—Contractors Equip. & Supply Co., 1436 Ulster St.
Durham, N. C.—Associated Scaffolders & Equip. Co., 944 Foster St.
Ellwood City, Pa.—West Scaffolding & Equip. Sales, 508 First Ave.
El Paso, Tex.—Electrical & Mechanical Supply Co., Inc., P. O. 137
Flint, Mich.—Schuster Equip. Co., Inc., G 2122 Hemphill Rd.
Fort Wayne 4, Ind.—Korte Bros., Inc., 335 Murray St.
Freeport, Tex.—Industrial Services of Brazosport, Inc., Box 817
Goldsboro, N. C.—H. B. Owsley & Son of Goldsboro, Inc., 1212 N. William St., Box 1244
Grand Rapids, Mich.—Schuster Equip. Co., Inc., 3648 South Division
Houston 18, Tex.—L and L Contractors, P. O. Box 10182
Indianapolis 2, Ind.—A. F. Deaney Co., Inc., 719-721 N. Pine St.
Jacksonville 4, Fla.—American-Universal of Fla., Ind., P. O. Box 2912, 142 Stockton Street
Lancaster, Pa.—Lancaster Contractors Equip. Cooperative Assoc., 204 Pitney Rd.
Lancaster, Pa.—Service Supply Corp., Box 1138, Pitney Road
Little Rock, Ark.—Finke & Williams, Inc., 1301 E. 5th St.
Louisa, Ky.—Ens Compton Indus., 111 Perry St., Box 1
Louisville 2, KY.—Robert L. Schmitt Co., 306 E. Main St.
Memphis, Tenn.—Finke & Williams, Inc., P. O. Box 8201
Miami 42, Fla.—Universal Scaffolding Co., Inc., 2760 N. W. 36th St.
Milwaukee 9, Wis.—Best Equip. Corp., 3820 W. Villard Ave.
Minneapolis 5, Minn.—Olson Equip. Co., 4411 Hiawatha Ave. S.
Montgomery 2, Ala.—Boar Lumber Co., Inc., Box 1149, Jefferson & Perry Streets
New Orleans 25, La.—H. S. Finke Corp., P. O. Box 13157
New York 59, N. Y.—Universal Scaffolding Corp., Viele & Longfellow
North Canton, Ohio—Hutt Scaffold & Equip., Inc., 3684 Cleveland Ave., N. W.
N. Kansas City 16, Mo.—Beblitz Machinery Co., 14th & Howell Sts.
Oak Park 37, Mich.—Schuster Equip. Co., Inc., 23151 Meyers Rd.
Oklahoma City 8, Okla.—Auxier-Scott Supply Co., 3300 W. Reno

Continued on next page

***SAFETY PRODUCTS INDEX* begins on page 301**

Safety Products Sources

Oklahoma City, Okla. —Brown Machinery Co., Inc., 1125 Exchange Ave.
Old Washington, Ohio—Southeastern Equip. Co.
Omaha 31, Nebr. —Morris Paint & Varnish Co., 27th & Douglas Sts.
Philadelphia 33, Pa. —Clic-o-Thomton, Inc., 3307 Old York Road
Philadelphia 40, Pa. —Service Supply Corp., 20th St. & Erie Ave.
Phoenix, Ariz. —General Construction Supply Corp., 116 S. 42nd St.
Rensselaer, N. Y. —Van's Equip. Sales, Inc., P. O. Box 231-Rts. 9 & 20
Rochester 11, N. Y. —B-G Equip. Co., Inc., 1180 Scottsville Rd.
St. Louis 10, Mo. —Vernon L. Goedecke Co., Inc., 4101 Clayton Ave.
Salt Lake City, Utah—Contractors Equip. & Supply Co., 2991 S. 2nd West
Shreveport, La. —F & H Equipment Co., Inc., P. O. Box 3438
Sioux City 19, Iowa—Pecaut Industrial Supply Co., 1819 E. Fourth St.
Sioux Falls, S. D. —Pecaut Equip. Co., Box 777, 900 E. 8th St.
South Bend 28, Ind. —Korte Bros., Inc., 4914 Lincolnway West
Syracuse, N. Y. —Mid-State Contractors Equip. Co., Inc., 1212 Wolf St.
Toledo 3, Ohio—Moriarty Machinery Co., 209-13 Williams St.
Tulsa 15, Okla. —Masonry Supply & Equip. Co., 4950 E. Archer
Washington 17, D. C. —Tool & Supply Co., Inc. 10th & Girard Sts. N. E.
West Monroe, La. —F & H Equipment Co., Inc., 3009 Cypress St.
Wexford, Pa. —American-Universal Sales Corp., Route 19
Wichita, Kan. —Bublitz Machinery Co., 3503 W. Harry St.

UNIVERSAL MATCH CORPORATION
400 Paul Avenue, St. Louis 35, Missouri

Branch Offices:

Atlanta, Ga. —317 Buckhead Avenue, N. E.
Buffalo, N. Y. —257 Elmwood Ave.
Chicago, Ill. —3553 W. Peterson Ave.
Cleveland, Ohio—1997 Lee Road
Dallas, Tex. —Suite 104-105 Suburban Bldg., 5526 Dyer St.
Denver, Colo. —2155 Blake St.
Detroit, Mich. —14300 W. McNichols Rd.
El Paso, Tex. —304 Crestmont Drive
Houston, Tex. —915 Woodrow
Kansas City, Mo. —637 W. 99th Street
Las Vegas, Nev. —311 Parkway East
Los Angeles, Calif. —3305 Wilshire Blvd.
Memphis, Tenn. —2600 Poplar Street
Miami Beach, Fla. —Concourse Bldg., 9550 Bay Harbor Terrace
Minneapolis, Minn. —708 Northwestern Federal Bldg.
New Orleans, La. —3200 St. Bernard Ave.
Newtonsville, Mass. —815 Washington St.
New York, N. Y. —100 W. 42nd St., Suite 400
Norwood, Ohio—4555 Montgomery Road
Philadelphia, Pa. —Broad Locust Bldg., 1405 Locust St.
Pittsburgh, Pa. —Suite 508-509 Park Bldg., 5th Ave. & Smithfield St.
Phoenix, Ariz. —1353 Indian School Road
St. Louis, Mo. —1708 Olive Street
San Francisco, Calif. —Suite 9096-Western Merchandise Mart-1355 Market Street
Seattle, Wash. —95 Connecticut St.
Washington, D. C. —1411 K Street, N. W.

UNIVERSAL TRANSISTOR PRODUCTS CORPORATION
36 Sylvester St., Westbury, New York

Sales Representatives:

Dallas, Tex. —Delzell-Maynard Sales Co., 2013 Cedar Springs
Los Angeles, Calif. —Wallace & Wallace, Bendix Bldg., 1206 Maple
North Plainfield, N. J. —Gene DiSciullo, 297 Green Brook Rd.
Seattle, Wash. —Northwest Sales & Eng. Service Co., 915 Terminal Sales Bldg.
Valley Stream, N. Y. —M. Clifford Agress, 891 Fulton St.
W. Hartford 7, Conn. —Zaslow Sales Co., 108 Foxcroft Rd.
Wilmington, N. C. —Buthan, Inc., 4924 Oleander Dr.

Toronto 10, Ont., Canada—Conway Electronic Enterprises, 1514 Eglinton Ave., West

UNIVERSAL VALVE CO.
P. O. Box 444, Elizabeth, N. J.

UPSON WALTON COMPANY
12500 Elmwood Ave., Cleveland 11, Ohio

Branch Offices:

Chicago 51, Ill. —3525 W. Grand Ave.
Long Island City 1, N. Y. —48-51 Thirty-Sixth St.
San Francisco 7, Calif. —500 Minnesota St.

VACUUM CAN COMPANY "AERVOID"
19 So. Hoyne Avenue, Chicago 12, Illinois

VAPOR RECOVERY SYSTEMS COMPANY
2820 N. Alameda Street, Compton, California

Branch Offices:

Camden, N. J. —Second & Beckett Sts.
Chicago, Ill. —3915 West 103rd St.
Cleveland 13, Ohio—1313 Terminal Tower
El Cerrito, Calif. —10542 San Pablo Ave.
Houston 2, Texas—466 M & M Bldg.
New Orleans 12, La. —1119-1121 Richards Bldg.
New York, N. Y. —Suite 2220-30 Church St.

Distributors:

Eustis, Fla. —Earle Richardson Co., 121 Magnolia Ave.
Honolulu, Hawaii—Allan R. Duvall, McCully Square Bldg.
Kingsport, Tenn. —Tenn. Instrumentation Co., 309 Commerce St.
Louisville 16, Ky. —Control Products Co., P. O. Box 36
Needham Hgts., Mass. —Clarence B. Petty Co., 50 Kearney Rd.
St. Louis 20, Mo. —Carl F. Gast, 6110 Garesche Ave.
Salt Lake City, Utah—Wayne Wiscomb Co., P. O. Box 19, Sugar House Sta.
Seattle 14, Wash. —H. D. Fowler Co., Inc., 901 Lane St.
Tulsa 23, Okla. —Ardusert Co., 303 So. Frankfort

VARI-PRODUCTS COMPANY
2450 S. Prairie, Chicago 16, Illinois

VICTOR ADDING MACHINE COMPANY
Electra-Car Division
3900 N. Rockwell Street, Chicago 18, Illinois

Distributors:

Atlanta, Ga. —420 Ponce De Leon Ave., N. E.
Detroit, Mich. —14621 Fenkell

VIS-O-LITE COMPANY, THE, INCORPORATED
3100 Ridge Avenue, East St. Louis, Illinois

VONNEGUT HARDWARE CO.
Von Duprin Division
402 W. Maryland St., Indianapolis 25, Ind.

Distributors:

Atlanta 19, Ga. —Glenn D. Robertson, 4210 Club Drive, N. E.
Bargersville, Ind. —Warren T. Whitmore
Brookline 47, Mass. —Kenneth H. Bullard Co., 15 Boylston Place, P. O. Box 466
Chicago 1, Ill. —W. A. Gibbon, 228 N. LaSalle St.
Cleveland Heights 18, Ohio—Van Deilden, Inc., 2000 Lee Rd.
Dallas 19, Tex. —S. H. Kemp Co., 2808 Oak Lawn, P. O. Box 6765
Denver 3, Colo. —Architectural Hardware Sales Co., 1657 Pennsylvania St.
Detroit 4, Mich. —Mark C. Stebbins & Sons, Inc., 8349 Joy Rd.
Edmonton, Alberta, Canada—Stanley P. Cockroft, 11531 88th St.
Gulfport, Miss. —Harold V. Toop Assoc., P. O. Box 668, Payne Bldg.
Honolulu 1, Hawaii—B. F. Shoen, Inc., P. O. Box 3464, 348 Puuhale Rd.
Los Angeles 26, Calif. —W. H. Steel Co., 1612 W. Beverly Blvd.
Memphis 14, Tenn. —Saltwick & Demlow Co., 946 Rayner St.
New York 13, N. Y. —Fred G. MacKenzie Co., Inc., 107 Reade St.
St. Paul 16, Minn. —Ringheim & Stockberger, 611 Snelling Ave., S.
San Francisco 11, Calif. —Yates & Felts, 7 Front St.
Seattle 2, Wash. —S. G. Kirkland, 845 Bellevue Ave. N.
Shawnee Mission, Kan. —B. E. Ericsson, Jr., 5316 Canterbury Rd.
Syracuse 6, N. Y. —T. E. Davidson, Inc., P. O. Box 68, Eastwood Sta.
Toronto 5, Ont., Canada—K. M. Thomas Co., 209 Davenport Rd.
Vancouver 14, B. C., Canada—Hans W. Carstens, 6876 Marguerite St.
Washington 5, D. C. —Ben F. Hamilton, 1507 M St., N. W.
Wyncote, Pa. —G. Norris Williams, 8109 Heacock Lane

San Juan, Puerto Rico—Alejandro Herrero, P. O. Box 1647
Manila, P. I. —Wm. H. Rennolds Co., Inc., 84092 Calle Magallanes Intramuros

WAGNER SIGN SERVICE, INC.
218 S. Hoyne Ave., Chicago 12, Ill.

WALTON-MARCH
P. O. Box 248, 1592 Deerfield Road, Highland Park, Illinois

WANSUTTA-PACIFIC INDUSTRIAL DIVISION
M. Lowenstein & Sons, Inc.
1430 Broadway, New York 18, N. Y.

WASCO PRODUCTS, INCORPORATED
5 Bay State Road, Cambridge 38, Massachusetts

Branch Offices:

Burbank, Calif. —2110 W. Magnolia Blvd.
Kansas City, Mo. —3619 Broadway
Kearny, N. J. —609 Schuyler Ave.

Toronto, Ont., Canada—19 Hafis Rd.

Distributors:

Atlanta, Ga. —Jerry G. Perkerson, P. O. Box 13126, Sts. "K"
Austin, Tex. —S. P. Gilbert Co., Perry-Brooks Bldg.
Billings, Mont. —Madden Construction Supply, P. O. Box 1522
Birmingham, Ala. —Snowden-Walters Co., Inc., 209 S. 19th St., Box 669
Buffalo 14, N. Y. —Robt. B. Devine, 41 Bennett Village Terrace, Sta. "H", P. O. Box 1426
Burbank, Calif. —Wasco Products, Inc., 2110 W. Magnolia Blvd.
Cambridge, Mass. —Wasco Products, Inc., Bay State Rd.
Charlotte, N. C. —R. G. Ross & Co., Inc., P. O. Box 1491
Chicago, Ill. —Harold A. Schweig & Co., 1325 Belmont Ave.
Cleveland, Ohio—Wilson & Dolphin, Inc., 2168 W. 25th St.
Columbus, Ohio—T. O. Lawler, P. O. Box 5736
Dallas, Texas—Volkmer & Kratz, 2501 W. Mockingbird Lane
Denver, Colo. —E. P. Murr, 2542 W. 28th Ave.
Duluth 3, Minn. —John V. Lynch, 129 E. Arrowhead Rd.
El Paso, Texas—Steel & Engineering Products, P. O. Box 3626
Fargo, N. D. —Construction Supply, P. O. Box 243
Floral Park, N. Y. —Kenneth Hargreaves & Co., P. O. Box 358
Gross Point Park 30, Mich. —A. K. Schlain Co., 15115 Charlevois Ave.
Hamden, Conn. —Ruval Assoc., 1058 Dixwell Ave.
Honolulu, Hawaii—Story & Pullen Co., 1410 Kapiolani Blvd.
Houston, Tex. —Associated Building Specialty, 5247 Kingsbury
Jacksonville, Fla. —Acousti Engineering Co. of Fla., 101 Copeland St.
Kansas City, Mo. —Wasco Products, Inc., Rm. 212, 1719 Wyandotte St.
Lexington, Ky. —E. H. Straus Co., 1115 Delaware Ave.
Little Rock, Ark. —Berlin Wilson Co., P. O. Box 3060 Gazette Bldg.
Lubbock, Texas—Ave. H., Building Mart
Memphis, Tenn. —Maury & Co., 1612 Lamar Ave.
Miami Beach 40, Fla. —Maisel, Murry, 5133 N. Bay Rd.
Midland, Tex. —Building Service Supply, 1503 W. South Front St.
New Orleans, La. —Joseph Ryan, 6435 Memphis
Omaha, Neb. —Engineering Products Co., 3252 Farnam, Suite 104
Owensboro, Ky. —Universal Services, 2015 Parrish Ave.
Philadelphia, Pa. —W. G. Silverman, 1419 Robbins Ave.
Phoenix, Ariz. —Beach Bldg. Specialties, Inc., 1040 E. Camelback
Pittsburgh 33, Pa. —Ward & Black Engineering Sales, 940 Western Ave.
Portland, Ore. —W. H. Cress Co., 201 Concor Bldg.
Rapid City, S. D. —Midwest Builders Supply, Inc., 813 Quincy
Richmond, Va. —John K. Messersmith Co., P. O. Box 392
St. Louis, Mo. —M. F. G. Associates, 34 No. Brentwood Blvd.
St. Petersburg, Fla. —Builders Specialty, Box 279
Salt Lake City, Utah—Joel Paulson, 963 E. 33rd So.
San Francisco, Calif. —C & B Supply Co., 1671 Jerrold Ave.
San Gabriel, Calif. —Wasco Products, Inc., 9163 Fairview Ave.
Santa Clara, Calif. —Panal Plastics, 750 Walsh Ave.
Santa Fe, N. M. —Builders' Specialty Service, P. O. Box 2098
Seattle, Wash. —Northwest Associates, 531 First Ave., W.
Spokane 17, Wash. —R. L. Montelius, 1403 York Ave.
Toledo 9, Ohio—Air Handling Products, 3151 South Ave.
Tulsa, Okla. —E. J. Broberg, 1844 E. 16th Pl.

Edmonton, Can. —Northern Asbestos & Building Supplies, 9310 125th Ave.
Mexico 6, D. F. —C. A. S. A., 8-50 Piso
Moncton, N. B., Can. —Jardine Engineering & Sales, 264 Church St.
Montreal, Que., Canada—Francis Hughes & Assoc., 4850 Amiens St.
Nuevo Vedado, Havana, Cuba—Aluminum Barriplastic Co., Ave. 26, No. 1452, Esquina 35
Santurce, Puerto Rico—I. Gil Ramon, 1203 Ponce de Leon Ave.
Toronto 15, Ont., Can. —Wasco Products (Canada) Ltd., 19 Hafis Rd.
Vancouver, B. C., Can. —Ritchie Products, Ltd., 2685 Maple St.
Winnipeg, Man., Can. —Thomas Jackson & Sons, Ltd., 1085 Ellice Ave.

WASH-RITE COMPANY, INCORPORATED
1410 Cornell Avenue, Indianapolis 2, Indiana

Branch Offices:

Hazelwood, Mo. —505 Lynn Haven Lane (Mike Finn)
Toledo, Ohio—823 River Road (Carl Boldt)

WASHINGTON PRODUCTS COMPANY
240 S. Fayette St., Washington C. H., Ohio

Distributors:

Atlanta, Ga. —John F. Hoffman, Distr., 1104 Peachtree St. N. E.
Birmingham, Ala. —Safety Engrg. Supply Co., 617 N. 10th St.
Birmingham, Mich. —Automotive Conversion Corp., 2191 Cole Ave.
Blytheville, Ark. —Cotner-Bevington Corp.
Boston, Mass. —American Fire Equip. Co., 717 Boylston St.
Charlotte, N. C. —Winchester Surg. Supply Co., 119 E. 7th St.
Denver, Colo. —Winter-Weiss Co., 2201 Blake St.
Detroit, Mich. —E & J Resuscitator Co., 3900 Grandy Ave.
Dunnellen, N. J. —Gold Crest Saf. Equip. Co., P. O. Box 155
Eunice, La. —Moosa Equip. Co.
Fort Smith, Ark. —Lynch Supply Co., 1815 S. "J" St.
Grand Prairie, Texas—Sargent-Sowell, Inc., 1211 E. Jefferson
Indianapolis, Ind. —Midwest Fire & Saf. Equip. Co., 1605 Prospect
Kansas City, Mo. —Shumate Hosp. Service & Supply, 1701 Cherry
Lima, Ohio—Superior Coach Corp.
Madison, Wis. —Fyr-Fyter Sales & Service, 516 E. Mifflin St.
Memphis, Tenn. —Miller-Meteor Sales Co., 2079 York Ave.
Miami, Fla. —Medical Supply Co., 735 N. W. 12th Ave.
Minneapolis, Minn. —Kelco Supply Co., 311 E. 14th St.
Missoula, Mont. —Superior Coach Sales
New York, N. Y. —Keefe & Keefe, Inc., 874 Lexington Ave.
Omaha, Neb. —Anderson Fire Equip. Co. 2421 Farnam St.
Piqua, Ohio—Miller-Meteor Co.
Pittsburgh, Pa. —Safety First Supply Co., 425 Magee
Reno, Nev. —Reno Rents, 1490 E. 2nd St.
Rossmoyne (Cincinnati), Ohio—Hess & Eisenhardt Co., 8959 Blue Ash Ave.
Salt Lake City, Utah—Surgical Supply Center, 357 S. 2nd, East
Seattle, Wash. —Shaw Supply Co., Inc., 1115 4th Ave.
Sherman, Texas—Randall P. Noe, Distr., P. O. Box 720
Washington, D. C. —Hosp. Amb. & Oxygen Service, 1012 18th St. N. W.
Wilmington, Del. —Gold Crest Chem. Corp., P. O. Box 1352
Youngstown, Ohio—Lyon's Physician Supply Co., 32 5th Ave.

Toronto, Ont., Can. —Dominion Wigs. Ltd., 109 Niagara St.

WATCHEMOKET OPTICAL CO.
232 W. Exchange St., Providence, R. I.
****See ad page 121.**

WAVERLY PETROLEUM PRODUCTS COMPANY
3048 Market Street, Philadelphia 4, Pennsylvania

WEAR PROOF MAT CO.
2156 W. Fulton St., Chicago 12, Ill.
****See ad page 39.**

WELSH MANUFACTURING COMPANY
9 Magnolia Street, Providence 9, Rhode Island

Branch Offices:

Chicago, Ill. —1736 S. Michigan Ave.
Dallas, Tex. —142 Howell Street
San Francisco, Calif. —788 Mission Street

Distributors:

Beaumont, Tex. —Industrial Optical Co., 1435 Calder Ave.
Birmingham, Ala. —Safety Supplies & Service Co., 1540 Montclair Rd.
Bridgeport, Conn. —Bridgeport Ind., Products, Inc., 22 Cross St.
Brookhaven, Ga. —Barrington Safety Equip. Co.
Chicago, Ill. —Durable Industrial Products, 2100 N. California
Cleveland, Ohio—Safety Clothing & Equip. Co., 1990 E. 69th St.
Columbus, Ohio—Ohio Safety Products Co., 538 Seymour Ave.
Copper Cliff, Ont., Can. —Soucie-Phillips Supply Co., 426 Diorite St.
Dallas, Tex. —Mid West Electrical Supply Co., 1014 Holcomb Rd.
Denver, Colo. —Safety Equipment Co., 1630-17th St.
Detroit, Mich. —Argus Supply Co., 4340 E. Davison St.
E. Chicago, Ind. —Ellis Safety Products Co., 3450 Michigan Ave.
Ft. Wayne, Ind. —Safety Equip. & Supply Co., 1724 W. Main St.
Houston, Tex. —Safety Engr. & Equip. Co., 4917 Feagan
Kansas City, Mo. —Edcor Safety Equip. Co., 611 West 17th
Lake Charles, La. —Lake Charles Pipe & Supply Co., 1228 Broad St.
Los Angeles, Calif. —Thompson Safety Equip. Co., 4907 W. Pico Blvd.
Miami, Fla. —Helco Distributors, Inc., 18480 W. Dixie Hwy.
Milwaukee, Wis. —Ace Welding Safety & Supply Co., 4325 South Howell Avenue
Nashville, Tenn. —Smalling Co., 604 Demonbreun St.
Newark, N. J. —Safeguard Ind. Supply Co., 271 Verona Ave.
Paramount, Calif. —Safety Service & Supply Co., 15005 Paramount
Philadelphia, Pa. —General Scientific Equip. Co., 7516 Limekiln Pike
Pittsburgh, Pa. —Pittsburgh Gage & Supply Co., 3000 Liberty
Portland, Ore. —Sanderson Safety Supply Co., 816 S. E. Hawthorne
Saginaw, Mich. —National Safety Products Co., 116 N. Hamilton St.
San Diego, Calif. —Bailey Equip. Co., 3856 California St.
San Francisco, Calif. —Brenton Equip. Co., 374 Brannan St.
Seattle, Wash. —Safety & Supply Co., 115 Blanchard St.
Springfield, Ohio—Mad River Supply Co., 10 N. Western Ave.
Waltham, Mass. —A. L. Postman Co., 25 Plympton St.

Toronto, Ont., Can. —Bell Electricord & Safety Ltd., 341 Bering Ave.

WEST CHEMICAL PRODUCTS, INC.
42-16 West St., Long Island City 1, N. Y.

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Safety Products Sources

WEST SIDE IRON WORKS, INC.
327-329 Front Avenue., N. W., Grand Rapids 2, Michigan
**See ad page 54.

Distributors:

Akron, Ohio—Acme Safety Products Co., 387 Storer Ave.
Albuquerque, N. M.—McCaffrey Way Materials & Supply, 2107 Menaul
Alexandria, Va.—Traffic Engr. Supply Corp., 808 N. Fairfax Str.
Baltimore 3, Md.—John C. Louis Co., 1805 Cherry Hill Rd.
Baltimore 28, Md.—Lee Marshall Co., 4401 Cedar Garden Rd.
Baton Rouge, La.—Southern Utility Supply Co., 4865 Choctaw Dr.
Billings, Mont.—Hall Perry Machy. Co., 902 Central Ave.
Birmingham, Ala.—Safety Engr. & Supply Co., 617 N. 13th St.
Buffalo, N. Y.—Elwood Corp., 2180 Elmwood Ave.
Cambridge 42, Mass.—Dyar Sales & Machy. Co., 247 Third St.
Charleston 4, W. Va.—Ind. Safety Supply Co., 5518 MacCorkle Ave.
Charleston 28, W. Va.—Firepoof Prod. Co., P. O. Box 2311
Chicago 5, Ill.—Merit Truck Parts & Wheel Co., 1599 S. Wabash Ave.
Chicago 4, Ill.—Royal Enterprizes, Inc., 332 S. Michigan Ave.
Concord, N. H.—New Hampshire Exp. & Machy., 261 S. Main St.
Coraopolis, Pa.—Safety Aids Co., 110 Mill St.
Dearborn 8, Mich.—R. B. Spang Sales Co., 22327 Olmstead
Denver 17, Colo.—American Refining Co., P. O. Box 5552 Terminal Sta.
Des Moines, Iowa—Warning Lites, Inc., 1141-37th St.
Detroit 34, Mich.—Averill Equip. Co., 19225 Conant Ave.
Eau Claire, Wis.—Aring Equipment Co., Route #2
E. Chicago, Ind.—Ellis Safety Prod. Co., 3493 Michigan Ave.
Grand Prairie, Tex.—Sargent Sowell, Inc., 1172-107th St.
Grand Rapids, Mich.—Contractors & Ind. Sales Co., 1825 Monroe Ave., S.
Honolulu, Hawaii—National Barricade of Hawaii, 2849 Kalihikapu St.
Indianapolis, Ind.—Somers Equipment Co., 1710 E. 39th St.
Jefferson, Wis.—Arthur A. Lade, 508 N. High St.
Kalamazoo, Mich.—Bemis & Sons, Inc., 235 Cooley St.
Knoxville, Tenn.—Building & Utilities Spec., 829 N. Central Ave.
Lansing 10, Mich.—E. L. West Co., 2919 Hillcrest
Louisville, Ky.—Orr Safety Equip. Co., 1551 S. 10th St.
Memphis, Tenn.—Utilities Equip. Company, 821 S. Barksdale
Mentor, Ohio—Earl Ives Equip. Co., 1585 Mentor Ave.
Milwaukee 13, Wis.—Aring Equipment Co., 1801 N. 108th St.
Minneapolis 14, Minn.—Wagner Equipment Co., 1042-17th Ave.
Mobile, Ala.—John M. Warren, P. O. Box #1, Crichton Sta.
Newark 4, N. J.—Davis Emergency Equip. Co., 45 Halleck St.
N. Hollywood, Calif.—A. F. Johnson Co., 10430 Burbank Blvd.
Oakhurst, N. J.—L. D. Seely Co., 78 Monmouth Road
Oakland, Calif.—J. A. Hughes Sales Co., P. O. Box 1438
Orchard Park, N. Y.—Transit Flasher Rental Service, 43 Potter Ave.
Petoskey, Mich.—Hyde Equip. Sales Co.
Philadelphia 4, Pa.—Guardian Safety Equip. Co., 214 S. 45th St.
Philadelphia 35, Pa.—Safety Equipment Co., 6913 Tulip St.
Phoenix, Ariz.—Klemmer Rebuilding & Supply, 716 S. 7th St.
Plymouth, Mich.—Plymouth Const. Equip. Sales, 48814 Gyde Road
Poughkeepsie, N. Y.—Hudson River Sales Corp., 32 Manchester Rd.
Reno, Nev.—Roeder Equipment Co., 288 Gould Street
Saint Louis 9, Mo.—E. R. Hensel Co., 5060 Arsenal St.
St. Paul, Minn.—Rosenwald Cooper, Inc., 490 N. Prior
Salem, Wis.—R. K. Ryan & Assoc., P. O. Box 210
Salt Lake City 10, Utah—Machinery Sales Co., 854 Richards St.
S. Portland, Me.—H. A. Burkitt, Inc., Route #1 R. F. D. 2
Springfield, Ill.—Highway Equip. Supply Co., 315 N. First St.
Tampa 10, Fla.—M. D. Moody & Sons, Inc., 6001 Hillsborough Ave.
Waterbury 8, Conn.—Direct Sales Co., 637 Watertown Ave.
Wichita, Kan.—Wichita Fire & Equip. Co., 553 W. Douglas

WESTERN LITHOGRAPH CO.
Westline Products Division
600 E. 2nd St., Los Angeles 54, Calif.

Branch Offices:

Boston 16, Mass.—419 Boylston St.
Chicago 49, Ill.—1957 E. 71st St.
Cleveland 15, Ohio—1010 Euclid Ave.
Newark 2, N. J.—972 Broad St.
Oakland, Calif.—600 16th St.

WHEELABRATOR CORPORATION
1454 South Byrkit Street, Mishawaka, Indiana

Distributors:

Sales Offices in all principal cities.

WHEELER PROTECTIVE APPAREL, INCORPORATED
226 West Huron St., Chicago 10, Illinois
**See ad page 783.

Distributors:

Akron, Ohio—Safety First Supply Co., P. O. Box 5155
Baton Rouge, La.—Guardian Safety Equip. Co., 3615 Capitol Heights Ave.
Birmingham 4, Ala.—Safety Engr. & Supply Co., 617 N. 10th St.
Buffalo 23, N. Y.—Elwood Corp., 2180 Elmwood Ave.
Cambridge 42, Mass.—Cutter, Wood & Sanderson Co., 222 Third St.
Charleston 1, W. Va.—Safety First Supply Co., 1104 Quarrier St.
Chicago 10, Ill.—Protective Equipment Inc., 634 Orleans St.
Cleveland, Ohio—Safety First Supply Co., 4251 State Rd.
Dallas 19, Tex.—Engineering Supply Co., 6000 Denton Dr.
Dayton 7, Ohio—Dayton Safety Supply Co., 11 Longworth St.
Decatur, Ga.—Allied Safety Supply Co., 836 Sycamore St.
Detroit 34, Mich.—Averill Equip. Co., 19225 Conant Ave.
East Syracuse, N. Y.—Syracuse Supply Co., Court St. Road
Elmira, N. Y.—American LaFrance Corp.
Houston 19, Tex.—Guardian Safety Equip. Co., 200 Sandman
Indianapolis, Inc.—E. A. Kinsey Co., 1550 Stadium Dr.
Kansas City 8, Mo.—Safety Inc., 17 East 31st St.
Knoxville, Tenn.—Safety Equip. Dist. Co., 832 W. Main St.
Largo, Fla.—Car-Mad Safety Equip., Inc., 570 N. Indian Rocks Rd.
Linden, N. J.—Guardian Safety Equip. Co., 37 E. 21st St.
Long Island City, N. Y.—W. S. Wilson Corp., 47-50 38th St.
Los Angeles 3, Calif.—E. D. Bullard Co., 6719 S. Figueroa St.
Louisville 2, Ky.—Robt. L. Schmitt Co., 306 E. Main St.
Milwaukee 6, Wis.—Protective Equipment Inc., 2001 Capitol Dr.
Minneapolis 6, Minn.—Viking Safety Products, Inc., 3431 E. 25th St.
Mobile, Ala.—Safety Engr. & Supply Co., P. O. Box 111
New Haven 11, Conn.—Abern Safety Equip. Co., 2 Eld St.
Oklahoma City, Okla.—Mid-Continent Transmission & Supply, Inc., 4 N. E. 27th St.
Philadelphia 4, Pa.—Guardian Safety Equipment Co., 214 S. 45th St.
Phoenix, Ariz.—Arizona Welding Equip. Co., 419 S. 7th St.
Pittsburgh 19, Pa.—Safety First Supply Co., 425 Magee St.
Portland 14, Ore.—Sanderson Safety Supply Co., 935 S. E. Hawthorne
Providence 3, R. I.—James E. Tierney, 131 Washington St.
Rock Island, Ill.—Protective Equipment Inc., 3231 25th St.
St. Louis 3, Mo.—Safety Inc., 3230 Olive St.
Salt Lake City 10, Utah—Industrial Supply Co., P. O. Box 600
Sausalito, Calif.—E. D. Bullard Co., 2680 Bridgeway
Seattle 1, Wash.—Safety & Supply Co., 119 Blanchard St.
Spokane, Wash.—Safety & Supply Co., North 219 Division St.
Toledo 10, Ohio—Safety First Supply Co., 858 W. Delaware Ave.
Tucson, Ariz.—Aweco Supply Co., 800 S. Park Ave.
Tulsa 10, Okla.—Engineering Supply Co., 1123 E. 4th St.
Warren, Mich.—Chas. A. Strelinger Co., 31855 Van Dyke Ave.
West Hartford, Conn.—Industrial Safety Supply Co., 574 New Park Ave.
Wheeling, W. Va.—Safety First Supply Co., 1 Garland Ave.
Wichita, Kan.—Mid-Continent Transmission & Supply Inc., 2027 N. Broadway

WHEELING CORRUGATING COMPANY
1134-40 Market St., Wheeling, W. Va.

WHITNEY, L. A., ASSOCIATES, INCORPORATED
331 Madison Ave., New York, New York

WIESMAN MANUFACTURING COMPANY
31 So. St. Clair Street, Dayton 2, Ohio
**See ad page 224.

Distributors:

Atlanta 12, Ga.—Allison Machinery Co., 575 Edgewood Ave., S. E.
Atlanta 10, Ga.—Bolden Die Supply Co., 1171 Lee St., S. W.
Buffalo 13, N. Y.—American Allsafe Co., Inc., 1245 Niagara St.
Chicago 24, Ill.—Surty Mfg. Co., Inc., 4139 W. Kinzie St.
Chicago 39, Ill.—Universal Safety Equip. Co., 5115 W. Diversey Ave.
Cincinnati 25, Ohio—Orr Safety Equip. Co., 2853 Colerain Ave.
Cleveland 14, Ohio—Lakeside Machy. Sales, Inc., 1311 St. Clair Ave.
Cleveland 3, Ohio—Safety Clothing & Equipment Co., 1990 E. 69th St.
Cleveland 10, Ohio—Standard Safety Equipment Co., 855 E. 152nd St.
Detroit 2, Mich.—Boyer-Campbell Div., 801 W. Baltimore
Detroit 2, Mich.—Boyer-Campbell Co., 6540 St. Antoine St.
Detroit 34, Mich.—Chas. A. Strelinger Co., P. O. Box 4674
Grand Rapids 2, Mich.—Grand Rapids Supply Co., Grandville & Wealthy, S. W.
Grand Rapids 8, Mich.—Mfg. Supply Co., 2851 Buchanan, S. W.
Grand Rapids 4, Mich.—Monahan-Standard Co., 351 Indiana Ave., N. W.
Grand Rapids 4, Mich.—Standard Machinery Co., 347 Indiana Ave., N. W.
Kalamazoo, Mich.—Safety Services, Inc., 1903 W. Main St.
Los Angeles 66, Calif.—Dickson Safety Products Co., 12921 W. Washington Blvd.
Los Angeles 3, Calif.—Guardian Safety Equip. Co., 7223 S. Main St.
Milwaukee 14, Wis.—Pagel Safety Prod., Inc., 4611-15 W. National Ave.
Muskegon, Mich.—Lakeshore Machy. & Supply Co., 400 W. Laketon Ave.
Newark 4, N. J.—Safeguard Industrial Equip. Co., 271 Verona Ave.
Newark 4, N. J.—Standard Safety Equipment Co., 604 Broadway
Palatine, Ill.—Standard Safety Equip. Co., 431 N. Quentin Rd.
Philadelphia 35, Pa.—Central Safety Equip. Co., 6601 Marsden St.
St. Louis 6, Mo.—McDonald Machinery Co., 1531-37 N. Broadway
St. Paul 14, Minn.—W. H. Schultz Co., 2438 Franklin Ave.
Sausalito, Calif.—E. D. Bullard, Co., 2680 Bridgeway
Toledo 12, Ohio—Edmund Burke Co., 361 Phillips Ave.
Tulsa 19, Okla.—Guardian Safety Equipment Co., 1742 So. Main St.
Tulsa 1, Okla.—Marshall Supply & Equipment Co., Inc., 920 E. Archer

WILDER MANUFACTURING COMPANY, INCORPORATED
Mechanic St. & Erie R. R., Port Jervis, New York
**See ad page 224.

WILKERSON CORP.
1242 W. Mansfield, Englewood, Colo.
**See ad page 211.

WILKIE OPTICAL, INCORPORATED
Shreve Rd. & New Jersey Turnpike, Barrington, New Jersey

WILKINS COMPANY, INCORPORATED, THE
Cortland 1, New York
**See ad page 114.

WILLIAMS JEWELRY & MANUFACTURING COMPANY
10 S. Wabash Ave., Chicago 3, Illinois
**See ad page 268.

WILLSON INDUSTRIAL SAFETY EQUIP.
212 E. Washington Ave., Madison 10, Wis.

Branch Offices:

Reading, Pa.—Willson Industrial Prod. Div., Ray-O-Vac Co.

WILLSON PRODUCTS DEVISION
Ray-O-Vac Co.
2nd & Washington St., P. O. Box 622, Reading, Pennsylvania
**See ad pages 115 and 116.

Branch Offices:

Madison, Wis.—212 E. Washington Ave.

Distributors:

Amarillo, Tex.—Radcliff Supply Co., 208 Polk St.
Ashland, Ky.—National Mine Service, Ashland Div., P. O. Box 888
Atlanta, Ga.—Fulton Supply Co., 342 Nelson St., S. W.
Austin, Tex.—San Antonio Machine & Supply Co., 901 E. Ben White
Baltimore, Md.—Carey Mach. & Supply Co., 3901-17 Brehms Lane
Beaumont, Tex.—Plowden Supply Co., 720 Franklin St.
Beckley, W. Va.—National Mine Service Co., Bomeco Div., Box 32
Billings, Mont.—Valley Welders Supply Inc., 202 N. 13 St.
Binghamton, N. Y.—Syracuse Supply Co., 53Mels Front St.
Birmingham, Ala.—Safety Engineering & Supply, 617 N. 13th St.
Borger, Tex.—Four R Industrial Supply Co., 328 E 3rd St.
Boston 18, Mass.—A. E. Halperin Co., Inc., 75-87 Northampton
Buffalo, N. Y.—American Allsafe Co., Inc., 1245 Niagara St.
Butte, Mont.—Montana Howe Co., 823 S. Montana St., P. O. Box 1944
Calgary, Alb., Canada—Safety Supply Co., 1216 Ninth Ave., S. E.
Cambridge, Mass.—Cutter, Wood & Sanderson Co., 222 Third St.
Canton, Ohio—Safety First Supply Co., 2914 Clearview Ave., N. W.
Casper, Wyo.—Casper Supply Co., 444-448 S. Center St.
Charleston, S. C.—The Cameron & Barkley Co., 160 Meeting St.
Charleston, W. Va.—Safety First Supply Co., 1104 Quarrier St.
Chattanooga, Tenn.—C. O. Gonker Co., 2109-13 Broad St.
Chicago, Ill.—Protective Equip. Inc., 634 Orleans St.
Cincinnati, Ohio—Orr Safety Supply Co., 2853 Colerain Ave.,
Cleveland, Ohio—Broadhead Garrett Co., 4960 E. 71st St.
Cleveland, Ohio—Safety First Supply, 4251 W. 35th St.
Columbus, Ohio—E. A. Kinsey Co., 1030 W. Fifth Ave.
Corpus Christi, Tex.—San Antonio Machine & Supply
Nat'l Bank Bldg., Allegheny & Kensington Ave.
Corpus Christi, Tex.—Southwest Equip. & Extinguisher Co., 526 Palm Drive
Dallas, Tex.—Engineering Supply Co., 6000 Denton Drive
Dayton, Ohio—Dayton Safety Supply Co., 11 Longworth St.
Dayton, Ohio—E. A. Kinsey Co., Inc., 16 Washington St.
Decatur, Ga.—Allied Safety Supply Co., 836 Sycamore St.
Denver, Colo.—Hendrie & Bolthoff Co., 1635 17th St.
Detroit, Mich.—Sterling H. Dockson, 5285 E. Outer Dr.
Detroit, Mich.—Chas. A. Strelinger Co., Box 4674
Edmonton, Alb., Canada—Safety Supply Co., 10206 106th St.
El Paso, Tex.—Mine & Smelter Supply Co., 1315 11th St.
Grand Rapids, Mich.—Safety Services, Inc., 52 Elmhurst Ave., S. E.
Great Falls, Mont.—Montana Howe Co., P. O. Box 1219
Greensboro, N. C.—Smith Courtney Co., Box 928, 820 Winston St.
Greenville, S. C.—Carolina Supply Co., 35 W. Court St.
Halifax, N. S., Canada—Safety Supply Co., 25 MacLean St.,
Harlingen, Tex.—San Antonio Mach. & Supply
Address: P. O. Box 218, Sunnyside Sta., Queens, N. Y.
Hickory, N. C.—Smith-Courtney Co., 1st Ave. & 3rd St., S. W.
Houston, Tex.—Plowden Supply Co., 6300 Navigation Blvd.
Indiana, Pa.—Whiteman Division, National Mine Service Co., 1260 Maple St.
Indianapolis, Ind.—E. A. Kinsey Co., Inc., 1550 Stadium Dr.
Indianapolis 1, Ind.—Orr Safety Equip. Co., 3106 E. Washington St.
Jacksonville, Fla.—Cameron & Barkley Co., Barkley Bldg., Box 5837, 1941 Hendricks Ave.
Jacksonville, Fla.—The Cameron & Barkley Co., 605 E. Forsyth St.
Jacksonville, Fla.—Duval Welding Supply Inc., 29 S. McDuff Ave.
Jenkins, Ky.—Kentucky-Virginia Division, National Mine Service, P. O. Box 872
Kalamazoo, Mich.—Safety Services, Inc., 1903 W. Main St.
Kansas City, Kan.—L. R. Stone Supply Co., 405 N. 6th St.
Kansas City, Mo.—Contractors Supply, 620 E. 18 St.
Lafayette, La.—Delta Fire & Safety, Inc., P. O. Box 1649, Oil Center Station
Lethbridge, Alberta, Canada—Safety Supply Co., 1290 1st Ave. S.
Logan, W. Va.—All-State Division, National Mine Service, P. O. Box 1671
Long Island City, N. Y.—W. S. Wilson Corp., 47-50 38th St., Mailing
Los Angeles, Calif.—E. D. Bullard Co., 6719 S. Figueroa
Louisville, Ky.—Neill-La Vielle Supply Co., 2211 South Brook St.
Louisville, Ky.—Orr Safety Equip. Co., 300 E. Main St.
Lynchburg, Va.—Jones Welding Supplies, 1103 12th St.
Madisonville, Ky.—Western-Kentucky Division, National Mine Service, 132 E. Center St.
Memphis, Tenn.—Clement Safety Equip., Inc., 720 S. 3rd St.
Miami, Fla.—The Cameron & Barkley Co., 727 N. West 1st Ave.
Milwaukee 6, Wis.—Protective Equip., Inc., 2001 W. Capitol Dr.
Minneapolis, Minn.—Viking Safety Products, Inc., 3431 E. 25th St.
Mobile, Ala.—Safety Engineering & Supply, P. O. Box 111
Montreal 28, Que., Canada—Safety Supply Co., 5545 St. James St., W.
Morgantown, W. Va.—Mountaineer Division, National Mine Service, 165 Holland Ave.
Mt. Carmel, Pa.—Anthracite Division, National Mine Service Co.
Newburgh, N. Y.—W. L. Smith Co., 165 Broadway
New Orleans, La.—Delta Fire & Safety, Inc., 923-25 Magazine St.
New Orleans, La.—Woodward, Wight & Co., Ltd., P. O. Box 370
Norfolk, Va.—Paxton Co., 1019 Main St.
Omaha, Neb.—Interstate Mach. & Supply Co., 1006 Douglas St.
Oklahoma City, Okla.—Hart Industrial Supply Co., 726 W. Grand Ave.
Oklahoma City, Okla.—Mid-Continent Transmission & Supply, Inc., 4 N. E. 27th St.
Orlando, Fla.—The Cameron & Barkley Co., 1502 N. Orange Blossom
Ottawa, Ont., Canada—Safety Supply Co., 199 Queen St.
Pampa, Tex.—Four R Industrial Supply Co., Inc., Box 370
Philadelphia, Pa.—Industrial Products, 2820 N. Fourth St.
Philadelphia 34, Pa.—Quaker City Railroad Sales Co., Philadelphia
Phoenix, Ariz.—Garrett Supply Co., 2950 W. Thomas Rd.
Pittsburgh 19, Pa.—National Mine Service Co., 2930 Koppers Bldg.
Pittsburgh, Pa.—Safety First Supply Co., 425 Magee St.
Portland, Ore.—J. E. Haseltine & Co., 115 S. W. 2nd Ave.
Port Arthur, Ont., Canada—Safety Supply Co., 219 Park St.
Portland 14, Ore.—Sanderson Safety Supply Co., Inc., 935 S. E. Hawthorne Blvd.
Prince George, B. C.—Safety Supply Co.
Providence, R. I.—James E. Tierney, 131 Washington St.
Regina, Sask., Canada—Safety Supply Co., 1840 Broad St.
Richmond, Va.—Smith-Courtney Co., 7th & Bainbridge Sts.
Roanoke, Va.—Jones Welding Supply, 225 11th St., S. E.
Rock Island, Ill.—Protective Equip., Inc., 3231 25th St.
Saginaw, Mich.—McGill Sales, 1905 S. Michigan Ave.
St. Louis, Mo.—Safety Products Corp., 1908 S. 12th St.
St. Louis 66, Mo.—Sligo, Inc., 4th & O'Fallon Sts., Box 171
Salt Lake City 10, Utah—Industrial Supply Co., Inc., 121-135 Social Hall Ave., P. O. Box 600
San Antonio, Tex.—San Antonio Mach. & Supply, 325 N. Center St.
Saskatoon, Sask., Canada—Safety Supply Co., 134 Ave. A. North
Sausalito, Calif.—E. D. Bullard Co., 2680 Bridgeway
Savannah, Ga.—The Cameron & Barkley Co., 2511 Augusta Rd.
Savannah, Ga.—Morgan's, Inc., 111 W. Broad St.
Schenectady, N. Y.—Syracuse Supply Co., P. O. Box 447
Scranton, Pa.—L. B. Potter & Co., 603 W. Lackawanna Ave.
Seattle, Wash.—J. E. Haseltine & Co., 510 First Ave., S.
Seattle, Wash.—Safety & Supply Co., 119 Blanchard St.
Shreveport, La.—Delta Fire & Safety, Inc., 5743 St. Vincent Ave.
Spokane, Wash.—J. E. Haseltine & Co., 1101 N. Division St.
Spokane, Wash.—Safety & Supply Co., N. 219 Division St.
Syracuse, N. Y.—Syracuse Safety Service, Inc., 1108 Spring St.
Syracuse, N. Y.—Syracuse Supply Co., P. O. Box 1044
Tampa, Fla.—The Cameron & Barkley Co., 107 S. Franklin St.
Toledo, Ohio—Safety First Supply Co., 858 W. Delaware Ave.
Toronto 2, Ont., Canada—Safety Supply Co., 214 King St., E.
Trail, B. C., Canada—Safety Supply Co., 1198 Cedar Ave.
Troy, N. Y.—Troy Belting & Supply Co., 4 & 8 Grand St.
Tulsa, Okla.—Engineering Supply Co., 1124 E. 4th St.
Tulsa, Okla.—Hart Industrial Supply Co., 215 E. First St.
Tulsa, Okla.—Krisman Industrial Supply, 308 E. Fourth
Vancouver, B. C., Canada—Safety Supply Co., 240 E. 10th Ave.
Vincennes, Ind.—National Mine Service, 1648 N. 13th St., Box 95
Waco, Tex.—San Antonio Mach. & Supply
W. Hartford, Conn.—Industrial Safety Supply, 574 New Park Ave.

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Safety Products Sources

Wheeling, W. Va.—Safety First Supply Co., 47 Garland Ave.
Wichita, Kan.—Mid-Continent Transmission and Supply Inc., 2027 N. Broadway
Wichita, Kan.—Vic DeWitt Co., 911 E. Third St.
Winnipeg, Man., Canada—Safety Supply Co., 172 Osborne St., S.

WILSON RUBBER COMPANY, THE
Div. of Becton, Dickinson & Company
1200 Garfield Ave., S. W., Canton 6, Ohio

Pacific Coast Warehouse:

San Francisco 5, Calif.—530 Howard St.

WIRE ROPE CORPORATION OF AMERICA, INCORPORATED
609 North 2nd Street, St. Joseph, Missouri

Branch Offices:

Abilene, Tex.—718 N. Fifth Street
Atlanta, Ga.—665 Eighth Street, N. W.
Buffalo, N. Y.—39 Comet Street
Charleston, W. Va.—1104 Main Street
Chicago, Ill.—2452 N. Greenview Ave.
Cincinnati, Ohio—1021 Depot Street
Denver, Colo.—3649 East 40th Avenue
Detroit 9, Mich.—5740 Federal Ave.
Houston, Tex.—4613 Calhoun Road
Los Angeles, Calif.—1018 S. Santa Fe Avenue
Memphis, Tenn.—257 East Georgia Avenue
Newark, N. J.—231 Johnson Ave.
New Orleans, La.—1949 Lafayette Street
North Haven, Conn.—375 Washington Ave.
Odessa, Tex.—5507 Andrews Highway
Pittsburgh, Pa.—1004 Washington Blvd.
Portland, Oregon—2221 N. W. Thurman Street
San Francisco, Calif.—370 Tenth St.
Shreveport, La.—467 Montgomery Street
Tampa, Fla.—3101 Third Avenue
Tulsa 20, Okla.—302 E. Brady Street

WITT CORNICE COMPANY, THE
4454 Steel Place, Cincinnati 9, Ohio

WOLVERINE SHOE & TANNING CORPORATION
Rockford, Michigan

WOOLRICH WOOLEN MILLS
Woolrich, Pennsylvania
**See ad page 187.

WOOSTER PRODUCTS, INCORPORATED
Foot of Spruce Street, Wooster, Ohio

WORKLON, INC.
253 W. 28th St., New York 1, N. Y.
**See ad page 189.

Branch Offices:

Los Angeles 29, Calif.—1007 Madison Ave.

WORLD DRYER CORPORATION
616 W. Adams St., Chicago 6, Ill.

Branch Offices:

New York, N. Y.—225 W. 34th St.
St. Louis, Mo.—3175 Morgan Ford Rd.

Distributors:

Greenville, S. C.—L. P. Batson Co., P. O. Box 772
Hempstead, N. Y.—I. Janvey & Sons, 218 Front St.
Newark, N. J.—Formula Floor Products, 99 Freylinghuesen Ave.
Pittsburg, Pa.—M. B. Long Co., 5172 Baum Blvd.
San Francisco, Calif.—Colberg Supplies, Inc., 777 Golden Gate
Santa Monica, Calif.—Lako, Inc., 1711 Ocean Ave.

Toronto, Ont., Canada—Huntington Laboratories Ltd., 86 Parliament St.

WERNER, R. D., CO., INC.
P. O. Box 580, Greenville, Pa.

WYANDOTTE CHEMICALS CORPORATION
J. B. Ford Division
Wyandotte, Michigan
**See ad page 49.

District Sales Offices:

Atlanta, Ga.—1575 Northside Dr., N. W., Mail: Box 19505, Sta. N.
Boston, Mass.—709 Salada Bldg.
Buffalo, N. Y.—809 Liberty Bank Bldg., 424 Main St.
Chicago, Ill.—400 N. Michigan Ave.
Cincinnati, Ohio—500-A Dixie Terminal Bldg.
Cleveland, Ohio—1116-1010 Euclid Bldg.
Dallas, Texas—2727 Oaklawn
Detroit, Mich.—1120 Dime Bldg.
Kansas City, Mo.—224 Mill Creek Bldg., 4638 J. C. Nichols Pkwy.
Los Nietos, Calif.—8921 Dice Rd., Mail: Box 2147
Minneapolis, Minn.—1104 Currie Ave.
New York, N. Y.—4723 Empire State Bldg.
Philadelphia, Pa.—218 Wilford Bldg., 33rd & Arch Sts.
St. Louis, Mo.—Suite 610, Shell Bldg., 1221 Locust St.
Seattle, Wash.—539 Skinner Bldg.

Agincourt, Ont., Canada—15 Glen Watford Dr.

X-RAY MONITORING CORP.
43 W. 61st St., New York 23, N. Y.
**See ad page 262.

YALE & TOWNE MFG. CO., THE
11,000 Roosevelt Blvd., Philadelphia 15, Pa.

Branch Offices:

Baltimore 6, Md.—7112 Commercial Ave.
Cleveland 5, Ohio—7100 Krick Rd.
Detroit 1, Mich.—4466 Woodward Ave.
Franklin Pk., Ill.—9335 West Belmont Ave.
Harrisburg, Pa.—6691 Allentown Blvd.
Long Island City, N. Y.—49-39 Van Dam St.
Philadelphia 40, Pa.—4221 N. Broad St.
Pittsburgh 6, Pa.—5845 Centre Ave.
San Leandro, Calif.—2303 Merced St.
Washington, D. C.—Government Defense Prod. Div., 1145-19th St. N. W.

Industrial Truck Representatives:

Albany 3, N. Y.—Schenectady Mat. Hdlg. Co., 2022 Central Ave.
Albuquerque, N. M.—Albuquerque Mat. Hdlg. Equip. Inc., 221 Coal Ave. S. W.
Atlanta, Ga.—R. S. Kerr & Co., Inc., 957 W. Marietta St., N. W.
Birmingham 1, Ala.—Construction Equipment Co., 2921 Second Ave. S.
Boise, Idaho—Western Machinery, 3320 Western Ave.
Buffalo 10, N. Y.—E. D. Farrell Co., Inc., 603-605 S. Park Ave.
Charleston, W. Va.—Baker Equip. Engineering Co., Inc., 404 Morris St.
Charlotte, N. C.—Coleman Co., Inc., 4640 Old Pineville Rd.
Chattanooga, Tenn.—Osborne Equip. Co., 1501 E. 39th St.
Cincinnati 10, Ohio—Moon Equip. Co., 9880 Springfield Pike
Clarksburg, W. Va.—Baker Equip. Engr. Co., Inc., 250 Monticello Ave.
Columbus 8, Ohio—Col-Mer Co., 949 W. Third Ave.
Dallas 7, Tex.—Briggs-Weaver Mchy. Co., 5000 Hines Blvd.
Dayton 4, Ohio—Materials Handling Systems, 1701 Webster St.
Denver 5, Colo.—Coorsay Equip. Co., 3327 Brighton Blvd.
Des Moines, Iowa—Ken-Dick Corporation, 1701 Second Ave.
Erie, Pa.—Christian G. Kramer Co., 1011 Holland St.
Evansville 7, Ind.—Belmont Equip. Co., 315 E. Illinois St.
Fort Wayne, Ind.—Kimball Ind. Sales, Inc., 4936 Nob Rd.
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Greenville, S. C.—Coleman Co., Inc., 305 Rutherford Rd.
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National Safety News
March, 1961

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ADDRESS _____ CITY & STATE _____

Please send me more information on the items circled below: **MARCH, 1961**

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IFC	IBC	BC	1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
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NAME _____ POSITION _____

COMPANY _____

ADDRESS _____ CITY & STATE _____

this is the

ANNUAL SAFETY EQUIPMENT ISSUE

OF NATIONAL SAFETY NEWS

Your year-around guide to products and services for your safety program

This issue is divided into 12 sections—one each for the major categories of safety products and services. Each section contains feature articles on the use and selection of safety equipment as well as advertising for safety products in the category.

We suggest that you go through this issue, section by section, and circle the Key Numbers on one of the Reader Cards below of the products in each section that you'd like more information on. Manufacturers will send you literature on the products you requested free and without obligation. You can file this literature according to the 12 sections of this issue, and you will have a valuable collection of data on safety products at your fingertips.

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6. PERSONAL PROTECTION — 2
   protective clothing, foot protection, hands & arms, legs, safety belts
7. MATERIALS HANDLING
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11. MEDICAL & HEALTH SERVICE
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National Safety News
March, 1961

You want STYLE

— THESE NEW CESCO GLASSES HAVE IT!



You want SAFETY

— THEY HAVE THAT, TOO!



They're CESCO's new two-tone Styl-Safe safety glasses... an entirely new design which combines smart styling and practical protection in one pair of glasses. Styl-Safe glasses have broad-bearing temples with head-hugging spatula ends that are not only good to look at, but they hold the glasses securely in position and prevent them from "riding" forward. Available in Briar or Charcoal, temples are joined to the two-tone frame with 7-barrel hinges. Core wire in temples gives firm strength and rigidity to the entire piece. Temple ends, broader than on most safety glasses, provide added strength and improved appearance.

CESCO Styl-Safe glasses feature 6 curve safety clear or anti-glare lenses mounted in deep-seated lens grooves for *maximum* protection against impact. New two-tone glasses are available with keyhole bridge in sizes 20, 22 and 24. Your choice of the following sizes and colors: Charcoal and Crystal • 356CC (46x39 mm) or 358CC (48x41 mm); Briar and Crystal • 356BC (46x39 mm) or 358BC (48x41 mm).

***SEE** your CESCO distributor or write our Chicago office for prices and complete information about CESCO Styl-Safe glasses*

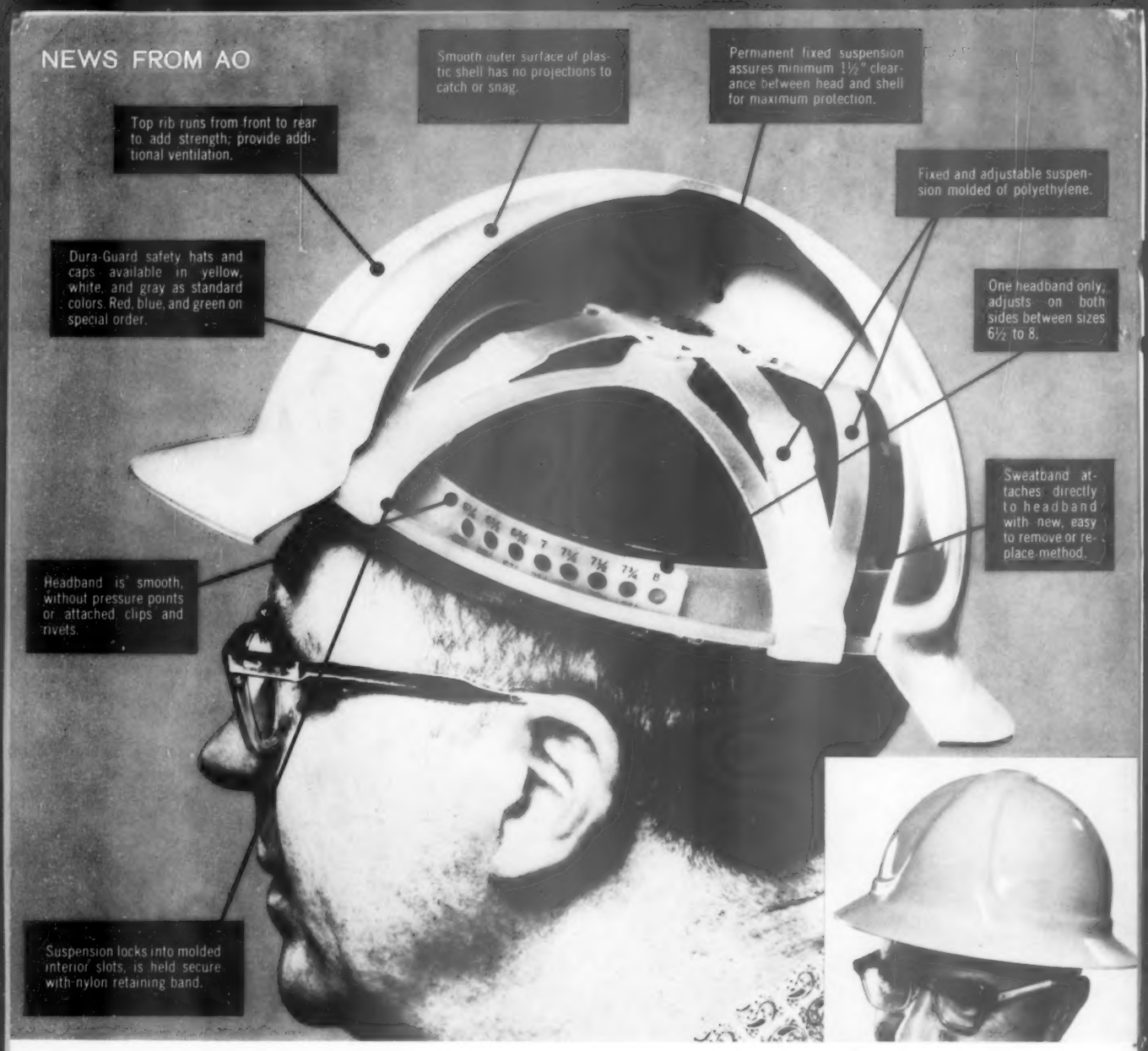
CESCO

CESCO FOR SAFETY

CHICAGO EYE SHIELD COMPANY 2705 West Roscoe Street, Chicago 18, Illinois

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NEWS FROM AO



Now: One safety hat to meet All requirements

Introducing the AO Dura-Guard . . . an *all-new* safety hat designed for *universal use*. Shells and suspensions are molded plastic, without holes or metal parts. New Dura-Guard hats and caps meet or exceed all standard specifications, and *every* Dura-Guard may be used wherever dielectric protection is required. Dielectric strength in accordance with E.E.I. specifications (April 1954) is available in individually tested hats and caps.

The injection molded shell is of uniform thickness throughout critical areas. Plastic suspension and headband are lightweight, comfortable, long-wearing, nonconductive, easy to clean. Headband adjusts on *both* sides to stay centered in shell, eliminate floating. Sweatband can easily be slipped out for cleaning *without removing any other part*, is made in telescoping halves for comfort and economy. Front half, which tends to soil or wear first, can be replaced at minimum cost.

For full information on these and the many other Dura-Guard features, contact your nearest AO Safety Products Representative, or write for Folder S-1456.

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